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Monticello Site Management Plan

October 2000

U.S. Department of Energy

GRAND JUNCTION OFFICE

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Monticello Site Management Plan

October 2000

Prepared by
U.S. Department of Energy
Albuquerque Operations Office
Grand Junction Office

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Acronyms and Abbreviations

AA	alternatives analysis
AEC	U.S. Atomic Energy Commission
AL	Albuquerque Operations Office
ARARs	applicable or relevant and appropriate requirements
BLM	U.S. Bureau of Land Management
BLRA	baseline risk assessment
BMPA	Best Management Practice Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COR	Close-Out Report
CRP	Community Relations Plan
DOE	U.S. Department of Energy
EA	environmental assessment
EE/CA	Engineering Evaluation/Cost Analysis
EM	environmental monitoring
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant difference
FFA	Federal Facility Agreement
FS	Feasibility Study
ft	foot (feet)
FY	fiscal year
GCL	geosynthetic clay liner
GJO	Grand Junction Office
HDPE	high density polyethylene
HQ	Headquarters
HASP	Health and Safety Plan
IRA	interim remedial action
IVC	independent verification contractor
in.	inch (inches)
IWMA	Interim Waste Management Area
LCRS	leachate collection and removal system
LDS	leak detection system
LTRA	Long-Term Response Action
LTSM	Long-Term Surveillance and Maintenance
MACTEC–ERS	MACTEC Environmental Restoration Services, LLC
mi	mile(s)
MMTS	Monticello Mill Tailings Site
MRAP	Monticello Remedial Action Project
MSGRAP	Monticello Surface- and Ground-Water Remedial Action Project
MVP	Monticello Vicinity Properties
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NOID	Notice of Intent to Delete
NPL	National Priorities List
OHM	OHM Remediation Services Corporation

OU	Operable Unit
PCB	polychlorinated biphenyls
pCi/g	picocuries per gram
PCOR	Preliminary Close-Out Report
PeRT	permeable reactive treatment
PSP	project safety plan
QA	quality assurance
QAPP	Quality Assurance Program Plan
QAPjP	Quality Assurance Project Plan
QC	quality control
RAA	Remedial Action Agreement
RAC	Remedial Action Contractor
RAR	Remedial Action Report
RCRA	Resource Conservation and Recovery Act
RDC	radon daughter concentration
RD/RA	Remedial Design/Remedial Action
RDWP	Remedial Design Work Plan
RI/FS	Remedial Investigation/Feasibility Study
RO	reverse osmosis
ROD	Record of Decision
SAP	Sampling and Analysis Plan
SARA	Superfund Amendments and Reauthorization Act
SCR	Site Characterization Report
SFMP	Surplus Facilities Management Program
SMP	Monticello Site Management Plan
SSAB	Site Specific Advisory Board
State	State of Utah
TAR	technical assistance and remediation
TDS	total dissolved solids
TES	threatened, endangered, and sensitive
TSF	temporary storage facility
UPDES	Utah Pollutant Discharge Elimination System
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
VCA	Vanadium Corporation of America
WL	working level
WWTP	wastewater treatment plant
yd^3	cubic yard(s)
ZVI	zero-valent iron

Executive Summary

The *Monticello Site Management Plan* (SMP) establishes the overall plan for remedial actions at the Monticello Mill Tailings Site and the Monticello Vicinity Properties Site. Both of these sites are located at and adjacent to the City of Monticello, in San Juan County, Utah. Both sites were on the National Priorities List (NPL); remedial action has been completed at the Monticello Vicinity Properties and it was deleted from the NPL. The U.S. Department of Energy (DOE) is conducting response actions pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. In 1988, the U.S. Environmental Protection Agency (EPA), the State of Utah (State), and DOE entered into a Federal Facility Agreement (FFA) (DOE 1988b) that defines the roles and responsibilities of the parties for response action at the two sites. DOE is the lead agency and performs response actions pursuant to Section 120 of CERCLA/SARA. EPA and the State provide oversight of the response actions as described in the FFA.

This SMP provides an overview of the response actions underway and planned at the Monticello NPL sites. It is intended as a management tool; additional information regarding the nature and extent of contamination and specific response actions can be found in the specific documents listed in the SMP.

The SMP is organized into eleven main sections. The sections correspond to the EPA model for management of Superfund sites (EPA 1993a). Section 1.0 presents general background information and the document objectives. Section 2.0 identifies the management structure, roles, and responsibilities. Section 3.0 presents project objectives. Section 4.0 describes the project tasks, applicable or relevant and appropriate requirements compliance, document submittals, and corresponding schedules and costs. Section 5.0 presents the project milestones and schedules, including the enforceable milestones. Section 6.0 describes the Long-Term Surveillance and Maintenance Program. Sections 7.0 through 11.0 address health and safety protection; quality assurance; acquisition strategy; project control; and references, respectively.

The stipulated penalty milestones listed in Section 5.0 are the enforceable milestones unless superseded by revised schedules agreed to by EPA, the State, and DOE. The general process for revising enforceable milestones is presented in Section 5.0. Milestones identified in this document are enforceable through fiscal year (FY) 2002. Dates beyond FY 2002 are targets only.

The original version of this document was finalized in March 1995. The SMP was revised in July 1998 and again in September 1999. Schedules and milestones were negotiated between DOE, EPA, and the Utah Department of Environmental Quality in June 2000. Section 5.0, Project Schedules and Milestones, was revised to reflect the agreed upon changes and Section 5.0 was submitted to the regulators in June 2000. This is the third complete revision of the SMP.

End of current text

1.0 Introduction

1.1 Site Background

1.1.1 Response and Enforcement History

This *Monticello Site Management Plan* (SMP) establishes the overall plan for remedial action activities at the Monticello Mill Tailings Site (MMTS) and Monticello Vicinity Properties (MVP) Site in Monticello, Utah. Both of these sites were on the National Priorities List (NPL). The MVP was remediated in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. Upon completion of remedial actions at the MVP, the MVP was deleted from the NPL on February 28, 2000. Remediation in accordance with CERCLA is ongoing at the MMTS. A Federal Facility Agreement (FFA) among the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA), and the Utah Department of Environmental Quality (UDEQ), pursuant to Section 120 of CERCLA/SARA, became effective December 1988 (DOE 1988b). DOE, EPA, and UDEQ agreed to perform response actions at the MMTS and MVP Site in accordance with the FFA. DOE is the lead agency that provides the principal staff and resources to plan and implement response actions. Responsibility for oversight of activities performed under the FFA will be shared by EPA and UDEQ; EPA is the lead agency with ultimate responsibility and authority but shares its decision making with UDEQ (DOE 1988b).

1.1.2 Purpose of the Monticello Site Management Plan

This SMP becomes the Work Plan identified in Section IX, Paragraph A, of the FFA. Pursuant to Section IX, Paragraph Q, of the FFA, the SMP shall be incorporated in and become an enforceable part of the FFA. The SMP supersedes DOE's Remedial Design Work Plan (RDWP) (DOE 1992b). This revision of the SMP supersedes schedules presented in Remedial Design/Remedial Action (RD/RA) Work Plans for Operable Unit (OU) I and OU II completed in 1995, and the SMPs dated March 1995, July 1998, and September 1999.

This SMP focuses on three major objectives, including (1) presentation of an overview of the organization of the Monticello Projects, (2) presentation of the major phases and critical tasks for the projects and, (3) establishing milestones for completion of the projects that consider the critical interrelationships of project phases and tasks.

Implementation of this SMP is consistent with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), CERCLA, and DOE orders and directives. This SMP describes the planning, coordination, and oversight activities to be conducted by the FFA parties. Technical baseline and work-scope definition are provided by enclosed or referenced documents. Roles and responsibilities of the FFA participants are identified. Other concerns such as quality-assurance (QA) and quality-control (QC) requirements, and overall complexity are discussed in this SMP.

Sections of this SMP correspond to the EPA model for management of Superfund sites as defined in the *Enforcement Project Management Handbook* (EPA 1993a). Section 1.0 presents

general background and objectives. Section 2.0 discusses organization, roles, accountability, team commitment to project objectives, review and approval responsibilities, and coordination activities. Section 3.0 presents project objectives. Section 4.0 describes project tasks, applicable or relevant and appropriate requirements (ARARs) compliance, document submittal, and corresponding schedule and cost. Section 5.0 discusses project schedules, including enforceable milestones and nonenforceable target dates. Other considerations addressed in this SMP include long-term surveillance and maintenance (LTSM); environmental, safety, and health protection; QA management; acquisition strategy for DOE contractors and subcontractors; and project control systems.

1.1.3 Site Descriptions and History

The MMTS and MVP Site are located in San Juan County, in and near the City of Monticello in southeastern Utah (Figure 1–1). The Millsite encompasses a 110-acre tract of land formerly owned by DOE. The Millsite is now owned by the City of Monticello and is surrounded by other property owned by the City of Monticello and the Utah Department of Transportation (UDOT), as well as private parties. The Millsite is situated in an east-trending alluvial valley formed by Montezuma Creek, a small intermittent stream that flows from the Abajo Mountains immediately to the west. Elevations at the Millsite range between 6,820 feet (ft) above sea level at the southeast corner to 6,990 ft at the northwest corner. Figure 1–2 shows the location of the three OUs for MMTS and a portion of the area included in the MVP Site.

The original Monticello mill was constructed in 1941 with government funding by the Vanadium Corporation of America (VCA) to provide vanadium during World War II. VCA operated the mill until early 1944 and again from 1945 through 1946 producing vanadium as well as a uranium-vanadium sludge. In 1948, the U.S. Atomic Energy Commission (AEC) purchased the site. Uranium and vanadium milling operations began again in 1949 under the auspices of AEC. Vanadium milling operations ceased in 1955, but uranium milling continued until 1960 when the mill was permanently closed.

Four tailings piles, resulting from processing vanadium and uranium ore, were left at the Millsite following the cessation of milling operations. The informal names for the separate tailings piles are the Carbonate Tailings Pile, the Vanadium Tailings Pile, the Acid Tailings Pile, and the East Tailings Pile (Figure 1–3). The Carbonate and Vanadium Tailings Piles received wastes from a salt-roast and carbonate-leach milling process until approximately 1955. The acid and east tailings ponds were then constructed to receive the wastes from the acid leach and carbonate-leach process. The total combined in-place volume of the four tailings piles and surrounding contaminated soils and related byproduct material was approximately 2.2 million cubic yards (yd^3).

In the summer of 1961, the AEC regraded, stabilized, and revegetated the East Tailings Pile by spreading tailings sand from the other three piles over its surface. After grading was completed, fill dirt and rock were spread over the tops and sides of all piles. The mill was dismantled by 1964. During the summer of 1965, 6 to 12 inches (in.) of topsoil were removed from the surrounding ore-storage areas and apparently used as fill material to partially bury the mill foundations. In 1974 and 1975, approximately 15,000 yd^3 of contaminated soil was removed from former ore-storage areas and placed on the previously stabilized surface of the East Tailings

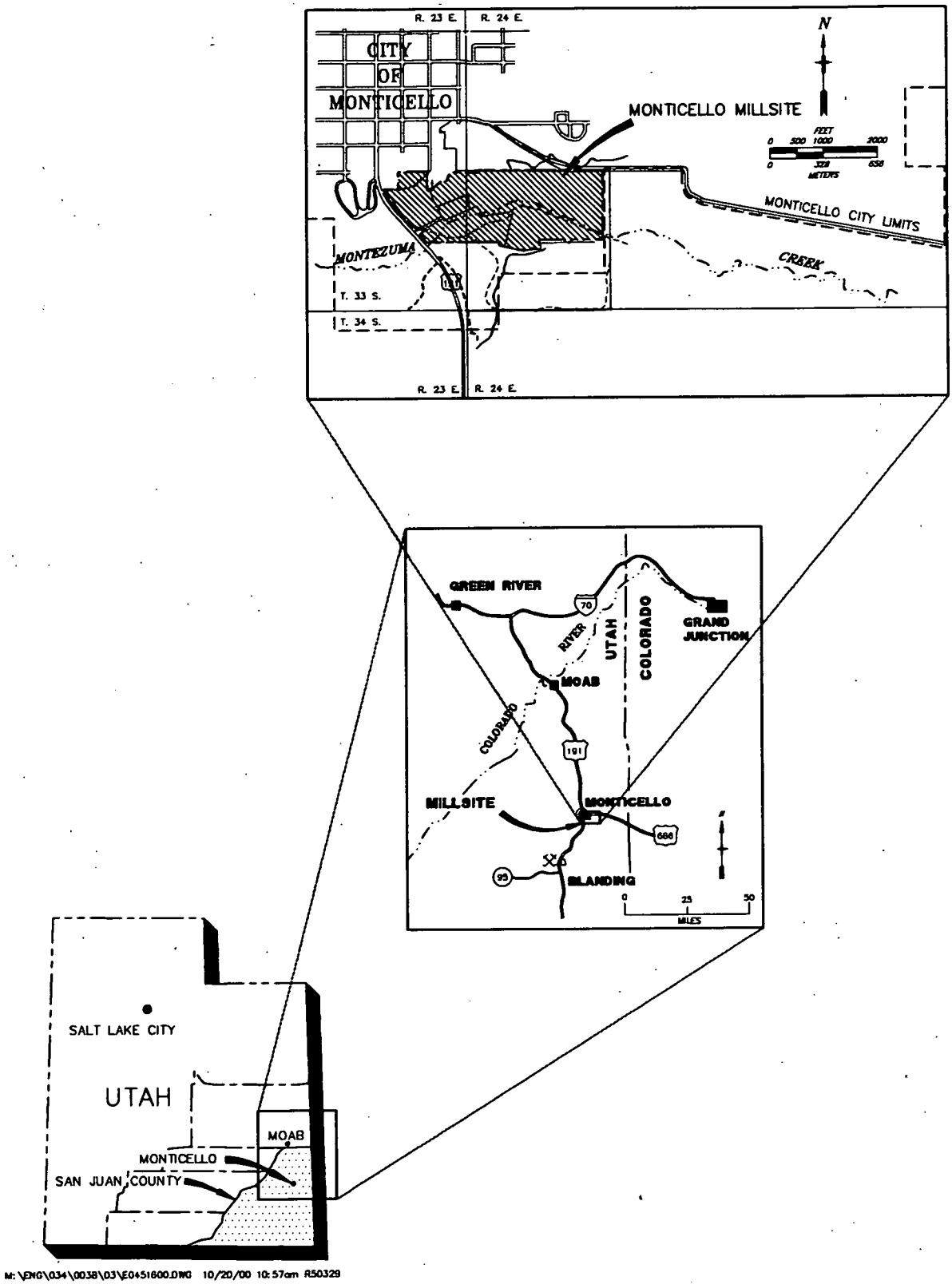

Figure 1–1. Regional Site Map

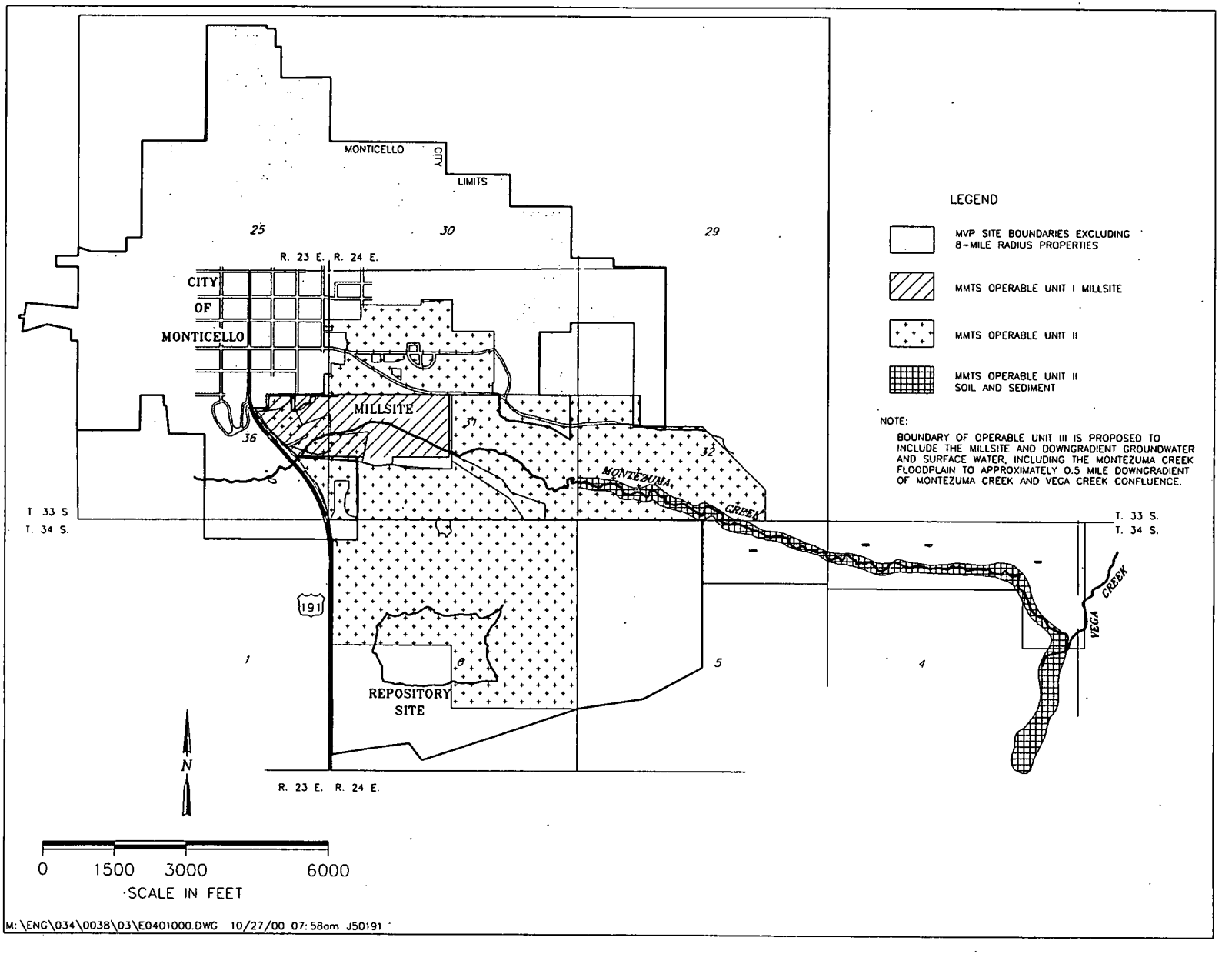

Figure 1–2. Locations of MMTS and MVP Site

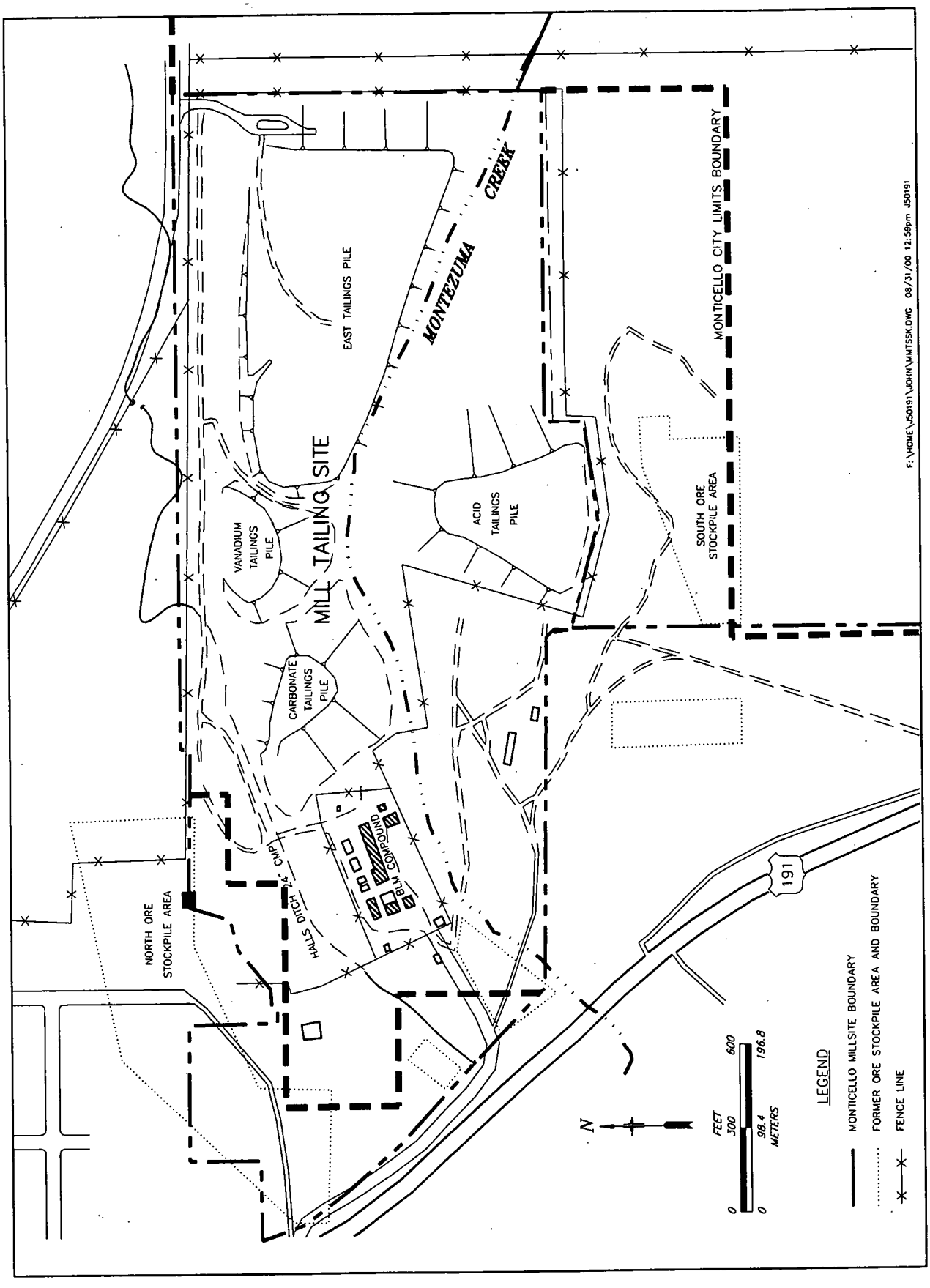

Figure 1–3. Monticello Millsite Tailings Impoundment Areas

Pile. These contaminated soils were not covered with clean soil before being graded, contoured, and reseeded.

DOE, under the authority of the Atomic Energy Act, initiated the Surplus Facilities Management Program (SFMP) in 1978 to ensure safe caretaking and decommissioning of government facilities that had been retired from service but still contained radioactive contamination. In 1980, the Millsite was accepted into the SFMP and the Monticello Remedial Action Project (MRAP) was established. The MRAP cleanup is being conducted by DOE's Office of Environmental Management (EM-1).

In 1983, remedial activities for vicinity properties were separated from MRAP with the establishment of the MVP Project. The MVP Site was listed on the NPL on June 10, 1986, and was remediated pursuant to a Record of Decision (ROD) dated November 29, 1989 (DOE 1989). The selected remedy for cleanup of the MVP Site was excavation of tailings, ore, and related byproduct material from vicinity properties; temporary storage on the Millsite; and final disposal in the same Repository described for OU I of the MMTS. Remediation of the MVP Site was completed in 1999 and deletion from the NPL became effective February 28, 2000. Appendix A provides a list of the properties included in the MVP Site by OU.

The MMTS was placed on the NPL on November 16, 1989. In January 1990, DOE completed the Remedial Investigation/Feasibility Study (RI/FS)-Environmental Assessment (EA) (DOE 1990a) for the Millsite. The RI/FS-EA was supplemented to include analyses sufficient to enable DOE to assess the impacts of the remedial action alternatives as required under the National Environmental Policy Act.

An MMTS ROD (DOE 1990b) was signed by all FFA parties in September 1990, and the remedies were selected for remediation of the Millsite and peripheral properties. The remedies required the removal of contaminated soils and tailings. Placement of contamination in an on-site repository was also selected (see Figure 1–2 for location).

A final remedy has not been selected for surface water and groundwater contamination because of the unknown effects of Millsite tailings removal on water quality. In addition to the Millsite, EPA has determined that the following properties are potentially affected by contaminated groundwater and/or surface water: MP–00179, MP–00181, MP–00391, MP–00951, MP–00990, MP–01077, MP–01084, MG–01026, MG–01027, MG–01029, MG–01030, and MG–01033.

Upon signing of the MMTS ROD, design of the on-site Repository was initiated. A conceptual liner design was completed in April 1993 (DOE 1993a) that incorporated evaluation of additional data collected on the hydrogeology of the Repository site. The Repository design was determined to be unacceptable because, on the basis of a performance assessment, it would not meet ARARs and because the constructibility of the proposed design was questionable. For the above reasons and because the cost for construction of the Repository was increasing, DOE decided to evaluate other remedial action alternatives.

The alternatives analysis (AA) identified two viable alternatives, 1) a revised on-site Repository design that could meet ARARs, and 2) off-site disposal at the U.S. Nuclear Regulatory Commission-licensed disposal facility south of Blanding, Utah. The on-site Repository was

redesigned to incorporate the installation of a double-liner system that could control leakage from the Repository to the extent necessary to ensure protection of groundwater quality. In addition, the cost of the on-site disposal alternative was reevaluated and significant cost savings were identified in the cost of Repository construction. Public input on the selection of a preferred alternative was obtained through various activities, including public meetings, public opinion surveys, and use of a toll-free telephone number that the public could call to state opinions and preferences. The process culminated in facilitated meetings with the Site Specific Advisory Board (SSAB), which was established to provide focused public input into the DOE decision-making process. The 19-member board selected off-site disposal as the preferred remedy by only one vote, indicating essentially no clear consensus with regard to remedy selection. DOE reviewed the two alternatives using the nine criteria established in Title 40 of the *Code of Federal Regulations* (CFR), Part 300 (40 CFR 300) NCP and on December 22, 1994, determined that the on-site alternative remained the preferred remedy.

1.1.4 Description of Operable Units

Remedial work conducted at a site is often divided into distinct segments known as OUs. Both the MMTS and the MVP Site have been divided into OUs. The OUs for the two sites are described separately below.

1.1.4.1 Monticello Mill Tailings NPL Site

The MMTS consists of three OUs:

- **Operable Unit I—Millsite Tailings and Millsite Property**. OU I consists of tailings impoundment areas, the area where the milling operations were conducted, and the on-site Repository where contamination has been permanently disposed. There were less than 1,000,000 tons of ore processed at the Monticello Uranium Processing Mill. Cleanup of the resulting tailings and properties contaminated by release of tailings or residual ore has resulted in the placement of approximately 2.5 million yd^3 of contaminated material in the permanent on-site Repository. Contaminated material was removed to radium-226 cleanup standards of 5 picocuries per gram (pCi/g) in the surficial 15 centimeters or to 15 pCi/g in successively deeper 15-centimeter layers. This material has come from the Millsite, properties peripheral to the Millsite and downstream of the Millsite, and properties in the MVP Site. Following cleanup to the radium-226 standards, approximately 75,000 yd^3 of contaminated soils under the tailings piles were removed to minimize residual uranium and metals contamination that could contribute to continued groundwater contamination. The residual material was placed in the Repository and on the outslopes of the Repository cover.

- **Operable Unit II—Peripheral Properties**. OU II consists of private and DOE-owned properties peripheral to the Millsite and downstream from the Millsite that are contaminated by windblown or stream-deposited tailings or by radioactive material from ore-buying stations and where mill facilities were located. Contaminated material was removed from peripheral properties, stored on the Millsite, and subsequently placed in the Repository. Contaminated material was removed to radium-226 cleanup standards of 5 pCi/g, to 15 pCi/g, or supplemental standards were applied. On three government-owned peripheral properties and nine privately owned properties along Montezuma Creek, supplemental standards were applied on all or parts of the properties. Application of supplemental

standards was pursued to minimize environmental damage from remedial action. Appendix A (page A–20) lists the properties for which supplemental standards were applied in OU II.

The remedy for the eight privately owned properties where contaminated soil and sediment was present along Montezuma Creek and where supplemental standards were applied was selected under OU III. Potential remedies (alternatives) for soil and sediment properties in OU III were evaluated in an AA (DOE 1998a). The alternatives included removal actions (i.e., excavation of contaminated soil and sediment) as well as remedies that applied supplemental standards. DOE proposed that the AA satisfied the requirements of an Engineering Evaluation/Cost Analysis (EE/CA) for a non-time-critical removal action because it included all required elements of an EE/CA. The AA evaluated the alternatives based on the nine CERCLA evaluation criteria (as required by a feasibility study) instead of the three criteria (i.e., effectiveness, implementability, and cost) typically used in an EE/CA.

DOE recommended removal actions requiring excavation of contaminated soil and sediment at alternative action levels above the 5 pCi/g surface cleanup criteria and application of supplemental standards for Upper and Lower Montezuma Creek and application of supplemental standards in Middle Montezuma Creek. Following a public comment period on the AA and recommended response action, the decision to implement the non-time-critical removal action was documented in an Action Memorandum followed by implementation. The removal action supplemental standards applications were prepared where contamination above the standards in 40 CFR 192.12 was left in place; approval of the supplemental standards applications by EPA and UDEQ documents acceptance of the removal actions as the final remedy. Because the remedial actions were similar in nature to the remedial actions implemented for OU II peripheral properties, the decision was made to include the soil and sediment portion of the OU III properties into OU II so they could be deleted from the NPL as part of OU II.

- **Operable Unit III—Surface Water and Groundwater.** OU III consists of contaminated groundwater and surface water. Contamination in the shallow groundwater system underlying the Millsite and in the surface water in Montezuma Creek is known to exceed UDEQ standards for water quality. A remedy for groundwater and surface water will be selected pursuant to the CERCLA process. Site characterization prior to Millsite excavation has been completed and the final RI (DOE 1998b) issued: a revised draft FS was submitted to EPA and UDEQ for review. A ROD for an interim remedial action (IRA) was signed on September 28, 1999, and the IRA was implemented. The IRA included the installation of a permeable reactive treatment (PeRT) wall. The objectives of the IRA are to prevent potential exposure to contaminated groundwater, to initiate remedial actions consistent with the final remedy for OU III, and to better understand surface water and groundwater contamination following the excavation of contaminated material from the Millsite. At the conclusion of the IRA (in 2004), an addendum to the RI will be prepared and the draft FS will be revised. A preferred final remedy will be described in a Proposed Plan, which will be subject to public comment. After consideration of public comment and review of the Administrative Record, EPA, UDEQ, and DOE will concur on the remedy.

1.1.4.2 Monticello Vicinity Properties NPL Site

The MVP Site contains 424 properties in eight OUs, Appendix A lists each property and the date it was included. An estimated 152,000 yd^3 were removed from the vicinity properties. Contaminated material was removed to radium-226 cleanup standards of 5 pCi/g, to 15 pCi/g, or to supplemental standards. Each OU is defined below.

- **Operable Unit A—Properties Included in the FFA.** OU A consists of 104 properties.

- **Operable Unit B—Properties Included Subsequent to the FFA.** OU B consists of 243 properties.

- **Operable Unit C—Disputed Properties.** OU C consists of 34 properties that have tailings contamination presumed to be from the Dry Valley Milling operation. DOE disputed its responsibility to remediate these properties because the contamination originated at an abandoned privately-owned uranium mill.

- **Operable Unit D—Properties Contaminated with Potential Hazardous Substances.** These properties were initially included in OUs A, B, or C. During site assessments for radiological contamination or during remedial action activities, the presence of concentrations of nonradiological hazardous substances that could present an unacceptable risk to human health and the environment was identified. Nonradiological hazardous substances that exceeded risk-based cleanup standards were remediated on all but one property where ongoing operations limited the extent of cleanup. Six properties are included in this OU.

- **Operable Unit E—Properties Crossed by Halls' Ditch.** There are 11 properties in OU E that were crossed by an irrigation ditch called Halls' Ditch. The ditch, which crossed the Millsite, was contaminated with tailings. The ditch was remediated but not reconstructed as agreed to by the owner of the ditch.

- **Operable Unit F.** OU F consists of 10 properties previously included in OUs A, B, or C, where owner negotiations or owner refusal to allow remediation delayed remediation. DOE ultimately negotiated access and completed remedial action.

- **Operable Unit G.** OU G consists of 11 properties included in the MVP Site since the beginning of 1995. Five of these properties were included as a result of the Site Boundary Program.

- **Operable Unit H—Supplemental Standards.** OU H contains five properties where supplemental standards have been applied. One is a privately owned parcel with piñon/juniper woodlands and four associated with U.S. Highway 191 embankment are owned by UDOT. Supplemental standards will also be applied to streets and utilities in the City of Monticello rights-of-way. These areas have not been included as properties but are located within the City of Monticello; therefore, they are considered part of the MVP Site.

1.1.5 Monticello Remedial Action Projects

DOE, as the responsible party, has established four projects for conducting response actions at MMTS and MVP Site:

- **MRAP.** This project consists of OU I of the MMTS and OU II properties that were remediated by the Millsite remedial action subcontractor. Remediation of tailings-related contamination under the tailings piles was also addressed by this project.

- **Monticello Surface- and Ground-Water Remedial Action Project (MSGRAP).** This project consists of OU III of the MMTS. A final decision regarding the remedy for contaminated groundwater and surface water will be reached under this project. Historically, MSGRAP included the characterization through remedial action of the OU II properties contaminated by stream transport of tailings from the Millsite except for the property immediately downstream from the Millsite which is included in MRAP.

- **MVP Project.** This project consisted of the MVP Site and OU II peripheral properties not associated with Millsite remediation. The project was discontinued on September 30, 1999, because remedial action was completed and deletion from the NPL became effective February 28, 2000.

- **Monticello Program Management Project.** Work that addresses all of the above three projects is included in the Program Management Project

Each of the projects is tracked separately in various DOE planning and management documents. However, interrelationships among these projects have been acknowledged in those documents. Together, the four projects are termed the Monticello Projects.

1.1.6 Monticello Remedial Action Facilities

This section contains a brief narrative description of the facilities that are or have been used to support the CERCLA response actions. See Figure 1–4 for locations of these facilities.

1.1.6.1 Millsite

Millsite Access Area—The Millsite access area is located in the northeast corner of the Millsite. The access was the entry for subcontractor vehicles transporting tailings from the vicinity and peripheral properties to the Interim Repository where tailings were stored prior to final disposal in the Repository. It remained an access and egress point for work on the Millsite until remedial actions were completed, at which time the access trailer and offices were removed. A decontamination pad in the access area was used to remove contamination from equipment leaving the Millsite, the pad remains but is no longer used for that purpose. A sea/land storage container for OU III water sampling activities also remains at this site. The access area including the paving, decontamination pad, and fencing around the access area has been turned over to the City of Monticello as part of the Millsite land transfer effort to allow the city to develop the land for recreational purposes.

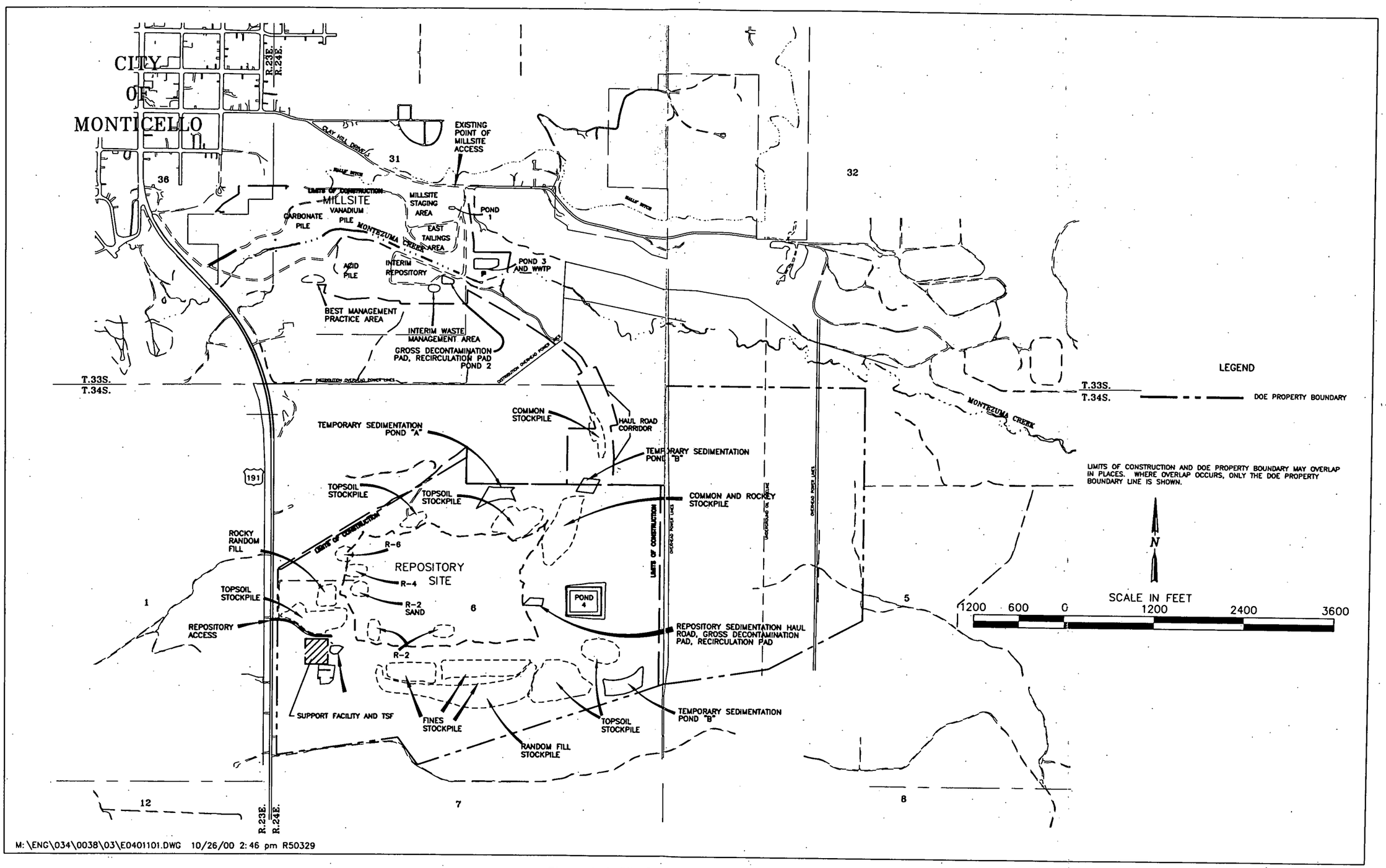

Figure 1–4. Site Overview Map

Ponds 1 and 2—Pond 1 was located on the northeastern side of the Millsite. The pond collected water used to decontaminate vehicles exiting the Millsite. The water was pumped out and used for dust control on contaminated areas of the Millsite or pumped to Pond 3. Pond 2 was designed as a temporary pond to collect contaminated runoff from the Interim Repository. The pond was made inactive due to redesign and construction of alternate on-site drainage controls following a release of untreated stormwater into Montezuma Creek in 1995. Pond 2 was modified to serve as the recirculation pond for the decontamination facility at the Millsite end of the haul road between the Millsite and the Repository. When the decontamination facility was abandoned, Pond 2 was used to contain brine produced by the on-site wastewater treatment plant (WWTP). Ponds 1 and 2 have been removed as part of the remedial action effort.

Pond 3—Pond 3 collected contaminated water from the Millsite area through a system of runoff-control ditches. Water removed from tailing excavations was also pumped to Pond 3. Pond 3 held approximately 5 million gallons of water, which was used for dust control in contaminated areas on the Millsite and in the Repository. The water level in Pond 3 was maintained to ensure capacity for a single 25-year, 24-hour storm event. When this water level was exceeded, water was pumped from Pond 3 to the WWTP for treatment to established effluent standards and discharged to Montezuma Creek. Alternatively, depending on water management requirements, water was also pumped to Pond 4 via a pipeline that was installed during September and October 1997. Pond 3 has been removed as part of the remedial action effort.

WWTP—The Millsite WWTP was used to treat the water from Pond 3 or Pond 4 before it was released to Montezuma Creek. Samples of the discharged water were taken to ensure compliance with Utah Pollutant Discharge Elimination System (UPDES) standards. The WWTP was designed to remove heavy metals, radionuclides, and total dissolved solids (TDS) from contaminated groundwater and surface water. Two treatment processes were used. One was precipitation followed by filtering. The other was a reverse osmosis (RO) treatment process. These processes were used in combination or separately depending on influent water quality. The equipment comprising the precipitation process was housed in two 48-ft trailers. Precipitation in Trailer 1 removed certain heavy metals and radionuclides. Adjustments to the pH of the water processed in Trailer 1 were made in Trailer 2, which also contained a membrane filtration system for filtering out particulate matter. A third trailer was available for final polishing, but was not successfully used. Initially, activated alumina was used to remove selenium, then zero-valent iron (ZVI). The activated alumina required the removal of sulfates which required the use of barium chloride.

The WWTP could not be operated to remove both selenium and barium to standards. Operation of the WWTP with the ZVI did not prove successful because adequate flow through the columns could not be attained along with sufficient resident time in the columns to remove selenium. The RO unit removed all contaminants of concern but generated a brine waste stream which required management. Use of the RO was primarily to remove selenium and TDS. The processed water from the RO unit was blended with water from the trailers.

The WWTP was initially operated at the MMTS in May 1995. This operation was defined as testing of wastewater in Pond 3 to determine removal efficiencies, but a substantial volume of water was treated in 1995 and 1996. Trailer 3 was initially placed into service in 1997 with an

activated alumina resin following modifications completed in the summer of 1996. Additional modifications were made in 1997 to meet the barium standard established by the State on April 28, 1997. These modifications were not successful and the RO unit was brought in to ensure that the UPDES standards could be met. The plant successfully treated over 50 million gallons prior to dismantling in May 1999.

Interim Waste Management Area—Remediation of both the MVP Site and MMTS generated wastes that required special management. An Interim Waste Management Area (IWMA) was established on the Millsite in June 1995 to store and manage these wastes. The IWMA was operated in conformance to the State of Utah Hazardous Waste Management Rules. During the 1997 construction season, wastes in the IWMA were treated to meet the Repository waste acceptance criteria and disposed of in the Repository. The only treatment required was to render liquid wastes non-liquid. All wastes were removed from the IWMA in the fall of 1997 and winter of 1998 and the facility was closed in 1999 as required by the Closure Plan in the Special Waste Management Plan (DOE 1997c).

Best Management Practice Area (BPMA)—The BMPA was used for the storage of contaminated soils that required more containment than that attained at the Interim Repository, but were not hazardous or liquid wastes requiring management at the IWMA. The types of waste stored at the BMPA were soil contaminated with waste oil that also contained lead in concentrations up to 1,500 milligrams per kilogram. The BMPA was located to the west of the Acid Tailings Pile, south of Montezuma Creek. The area was bermed and plastic laid over the bermed area. The purpose of the additional containment was to prevent uncontrolled release of the waste material. The wastes stored in the BMPA were placed in the Repository during the 1998 construction season and the area was remediated to radiological standards.

Interim Repository—The Interim Repository was located on the south side of the Millsite east of the Acid Tailings Pile. The area was used for the interim storage of tailings from the MVP and peripheral properties. The area had a capacity of 200,000 yd^3. The area included access roads, drainage control structures, and Pond 2. Runoff from this area was routed to Pond 3 via the onsite collection ditches. The materials placed here were moved to the permanent Repository during construction seasons 1998 and 1999.

1.1.6.2 Haul Road

Trucks were used to transport tailings along the 1.2-mile (mi) haul road that was constructed between the Millsite and the Repository. Use of the dedicated haul road reduced remediation traffic on U.S. Highway 191. Decontamination pads were constructed at both ends of the haul road. In 1997, trucks were decontaminated by removal of visible loose contamination, but not for free release. The purpose of the decontamination was to ensure that contamination on the trucks did not fall off and contaminate the haul road. Starting in 1998 the haul road was operated as a contaminated haul road to improve haul cycle times. Runoff from the haul road was contained and drained to Pond 3. The area around the haul road was periodically scanned to ensure contamination was contained on the haul road. All contaminated surfaces on and adjacent to the haul road were remediated in 1999.

The haul road embankment in North Draw will be used for fill material by the City of Monticello as part of the Millsite restoration effort. The City of Monticello will be conducting the restoration

effort pursuant to a Cooperative Agreement between DOE and the City (see Section 4.1.1.2 for additional information on the Cooperative Agreement). DOE will grade the road to blend in with the adjacent topography and revegetate the area after the City removes the fill. Wetlands displaced by the embankment will be replaced.

1.1.6.3 Repository

A double-lined Repository was constructed approximately 1 mi south of the Millsite. It was designed to contain 2.3 million yd^3 of contaminated material with the ability to expand the cell to contain 2.6 million yd^3. Approximately 2.455 million yd^3 of contaminated materials were placed in the Repository prior to its closure in 1999. A multi-layer cover that includes a radon barrier was constructed over the placed contaminated materials. The top of the cover will primarily consist of native vegetation to blend in with the surrounding terrain; however, slopes steeper than 20 horizontal to 1 vertical have been covered with rock. Facilities associated with the operations in the Repository area are described below.

Runoff Control Ditches/Sediment Ponds—Runoff control ditches have been constructed around all disturbed areas to limit off site sedimentation. These ditches channel water to one of three sediment ponds located around the Repository. The sediment ponds are designed to trap the sediment while allowing water to pass through. There are two sediment ponds located along the north side of the Repository. The third pond is situated on the southeast corner.

Stockpiles—Soils from the Repository excavation were stockpiled in several locations surrounding the Repository. The primary purpose of these stockpiles is to segregate the different soils excavated from the Repository. Each type of soil is used for a specific component of the Repository. There are three primary types of soils:

- ***Topsoil*** was used as the final layer on the cover of the Repository.
- ***Random fill*** was used for construction of Repository berms.
- ***Select fill*** was used for construction of the soil layer under the Repository liner and was also used for cover construction.

Support Area—The support area is located west of the Repository, just off of U.S. Highway 191. This area contained office trailers, lunchrooms, restrooms, and other administrative and employee facilities required for contractor and subcontractor use during remediation and restoration activities. The area was constructed in 1995 prior to initiating Repository construction. Due to the completion of the Repository and demobilization of construction activities, most of these facilities were removed in 2000. Two office trailers and two sea/land storage containers remain for LTSM use.

In 1999, a Temporary Storage Facility (TSF) was constructed in the support area for use by DOE and the City of Monticello for the storage of contaminated materials. These materials may be removed from supplemental standards areas or adjacent areas that become contaminated above applicable standards as a result of contaminant transport from supplemental standards areas. The TSF will be maintained by DOE under the LTSM Program.

Pond 4—Pond 4, located east of the Repository, is used to contain water and leachate removed from the Repository leachate collection and leak detection system(s). It was also designed to collect runoff during tailings placement prior to cover construction. Water was pumped to the WWTP for treatment. Over the long-term, the pond has been sized to function as an evaporation pond. The pond has a triple liner to ensure that groundwater quality will be protected. Based on estimates of anticipated transient drainage volumes, up to 7 million gallons can remain in Pond 4 after completion of Repository construction. The remaining 10 million gallons of capacity may be used to contain transient drainage (leachate).

DOE will continue to monitor Pond 4 after the Repository is filled with tailings and a protective cover is in place. The pond is expected to remain in use for up to 20 years depending on the flow of leachate from the Repository. Pond 4 will be decommissioned when liquid draining from the Repository becomes minimal or nonexistent. At that time, DOE may replace the pond with smaller storage tanks.

Lysimeters—Two lysimeters have been constructed to the south of the Repository access area to evaluate the performance of the water balance cover. One lysimeter has been constructed of optimum cover material for each of the cover layers. The other lysimeter is constructed of material that meets design specifications but is considered less than optimum for the performance of the cover. The effectiveness of the water balance portion of the cover will be monitored by measuring the amount of water that infiltrates through the upper layers of the cover through the capillary break to a collection system. The lysimeters will be monitored for 5 years with the use of data loggers and vegetative success will be visually evaluated 3 to 4 times a year during the first several growing seasons.

1.1.7 Schedule of Major Activities

Major activities completed or scheduled for completion of the Monticello Projects are listed in Table 1–1. These dates are late dates for completion of the activities; working schedule dates are earlier. The dates listed in Table 1–1 are consistent with dates listed in Section 5.0.

Table 1–1. Schedule of Major MMTS and MVP Activities

Operable Unit	Completion Date	Activity
Monticello Mill Tailings Site		
OU I	April 28, 1995	Pre-Final Design and Specification Package for Millsite Remediation (Complete)
	October 27, 1995	On-site activities initiated. (Notice to Proceed issued) (Complete)
	August 4, 1999	Cooperative Agreement with City of Monticello signed (Complete)
	August 31, 1999	Complete tailings removal (Complete)
	May 19, 2000	Complete Repository construction
	August 28, 2000	Notice of Award for Millsite restoration

Table 1–1 (continued). Schedule of Major MMTS and MVP Activities

Operable Unit	Completion Date	Activity
	July 17, 2001	Complete Millsite restoration
	January 2, 2002	Submit Draft-Final Remedial Action Report (RAR) for Millsite and Ground Water Properties
OU II	February 2, 1998	Submit Draft-Final Alternatives Analysis for soil and sediment (Complete)
	February 16, 1998	Complete design package submittals (Complete)
	March 23, 1998	Submit Draft-Final Remedial Action Design for soil and sediment (Complete)
	May 5, 1998	Submit Draft-Final Action Memorandum for soil and sediment (Complete)
	January 20, 1999	Submit Draft-Final Supplemental Standards Applications for soil and sediment (Complete)
	July 28, 1999	Complete remedial action for soil and sediment (Complete)
	October 30, 2000	Submit Draft-Final Remedial Action Report (Non-Groundwater Properties) (Complete)
	January 2, 2002	Submit Draft-Final Remedial Action Report for Millsite and Groundwater Properties
OU III	February 2, 1998	Submit Draft-Final Remedial Investigation Report (Complete)
	March 16, 1998	Submit Draft-Final Interim Proposed Plan (Complete)
	March 30, 1998	Submit Revised-Draft (pre-IRA) Feasibility Study for surface water and groundwater (Complete)
	August 17, 1998	Submit Draft-Final ROD for an Interim Remedial Action for surface water and groundwater (Complete)
	October 30, 2000	Submit Final Interim Remedial Action Work Plan
	September 30, 2002	Submit Draft-Final Evaluation of PeRT Wall Treatability Study
	April 9, 2004	Submit Draft-Final Addendum to RI
	August 18, 2004	Submit Draft-Final Feasibility Study (post-IRA) for Surface Water and Groundwater
	December 10, 2004	Submit Draft-Final Proposed Plan
	April 1, 2005	Submit Draft-Final ROD
	September 17, 2005	Submit Draft-Final Remedial Design Remedial Action Work Plan for Restoration of Surface Water and Groundwater
	June 15, 2006	Submit Pre-final Design for Restoration of Surface and Groundwater
	September 15, 2006	On-site activities initiated for restoration of surface water and groundwater (Notice to Proceed issued)
	January 15, 2008	Submit Draft-Final Interim Remedial Action Report

Table 1–1 (continued). Schedule of Major MMTS and MVP Activities

Operable Unit	Completion Date	Activity
Entire Site	February 13, 2002	Next CERCLA Five-Year Review
Monticello Vicinity Properties Site		
MVP Site—OU A	September 30, 1996	Construction Complete (Complete)
	November 8, 1996	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU B	September 30, 1997	Construction Complete (Complete)
	December 24, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU C	June 18, 1997	Construction Complete (Complete)
	October 15, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU D	November 4, 1997	Construction Complete (Complete)
	March 18, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU E	December 3, 1997	Construction Complete (Complete)
	March 18, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU F	July 10, 1998	Construction Complete (Complete)
	December 24, 1997	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU G	December 11, 1997	Construction Complete (Complete)
	September 12, 1998	Submit Draft-Final Remedial Action Report (Complete)
MVP Site—OU H	December 30, 1998	Construction Complete (Complete)
	April 29, 1999	Submit Draft-Final Remedial Action Report (Complete)
Entire Site	February 28, 2000	Deletion from NPL
	June 2000	Next CERCLA Five-Year Review

1.2 CERCLA Compliance Strategy

The MMTS is currently listed on the NPL; remediation of OU I and OU II is complete, but a final remedy for OU III has not yet been selected. The MVP Site was listed on the NPL, but as a result of completion of remedial activities, the direct and final rule removing it from the NPL became effective on February 28, 2000. Remediation of both sites is pursuant to CERCLA/SARA and the requirements of the NCP (40 CFR 300), as well as EPA guidance and directives on the implementation and interpretation of CERCLA. DOE has entered into an FFA, which states in part, "Pursuant to Section 120(a) of CERCLA, as amended, DOE agrees that it is bound by this Agreement and that the terms of this Agreement may be enforced against DOE..." The FFA further states, "The activities undertaken pursuant to this Agreement are subject to approval by EPA and shall not be inconsistent with CERCLA/SARA and the NCP..." The FFA is a legal commitment by DOE to comply with CERCLA.

DOE will work continuously and cooperatively with EPA and UDEQ to define and resolve compliance issues in a timely manner. DOE will ensure that the projects conform with CERCLA

requirements by assigning project personnel who are familiar with CERCLA requirements and are experienced managers of major projects under CERCLA/SARA; by providing timely and updated training to project personnel; and by ensuring that project personnel have access to legal, financial, and policy guidance needed to resolve compliance issues.

1.2.1 Enforcement Actions Taken Against DOE

In February and March of 1995, releases occurred from Ponds 2 and 3 that resulted in exceedence of the UPDES standards for discharge into Montezuma Creek. EPA assessed a stipulated penalty against DOE in the sum of $40,000 for the period of the releases and failure to construct, complete, and maintain proper controls to prevent the releases. DOE paid the penalty in August 1998.

This occurrence resulted in implementation of several corrective actions, including installation of an overflow connection from Pond 2 to Pond 3, construction of a diversion ditch around Pond 2, completion of measures to increase the capacity of Pond 3, and installation of the WWTP for treatment of water from Pond 3.

In December 1996 and April 1997, discharges from the WWTP and Pond 2 occurred that were above UPDES standards. UDEQ notified DOE that any further exceedence of effluent standards will be treated as a noncompliant discharge and past exceedences will be included retroactively in any enforcement action taken.

End of current text

2.0 Management Structure, Roles, and Responsibilities

Management roles and responsibilities for agencies involved in the completion of remedial action activities at the MMTS and MVP Site are described in this section and in the FFA (DOE 1988b). Management must ensure that response actions are fully consistent with the requirements of CERCLA and NCP, and that an accountability framework is established. The roles, responsibilities, and management relationship among DOE, EPA, and UDEQ presented in this SMP are summarized from the FFA. The FFA establishes a cooperative approach among EPA, UDEQ, and DOE for conducting response actions. DOE management structure is further described in this section to show the relationship among involved DOE offices.

2.1 U.S. Environmental Protection Agency

Responsibility for oversight of the activities performed under the FFA are shared by EPA and UDEQ, with EPA being the lead agency for oversight (DOE 1988b). Activities undertaken under the FFA are subject to approval by EPA, after consultation with UDEQ.

EPA has assigned remedial project managers in the Office of Ecosystems Protection and Remediation, Federal Facilities Program of EPA Region 8, located in Denver, Colorado.

2.2 Utah Department of Environmental Quality

UDEQ has assigned remedial project managers in UDEQ Division of Environmental Response and Remediation, located in Salt Lake City, Utah to the Monticello project. UDEQ provides project oversight to address UDEQ issues and concerns and participates in the planning, selection, and implementation of the remedial action.

EPA may delegate to UDEQ the review of specific tasks and shall accept recommendations from UDEQ regarding the acceptability of any particular submittal (DOE 1988b).

2.3 U.S. Department of Energy

DOE is a responsible party with respect to present and past releases at the Monticello site(s) (DOE 1988b). DOE is also the lead agency responsible for providing resources to implement response actions at the sites. Figure 2–1 shows the major organizational elements of DOE project management structure, and the following paragraphs discuss the components of the structure that are necessary to accomplish the response actions at the sites.

The Assistant Secretary for Environmental Management is the approving official who has overall responsibility and authority within DOE for the Monticello Projects. DOE-Headquarters (HQ) point of contact for the Monticello Projects is assigned under the Office of Southwestern Area Programs, Division of Off-Site Programs. The Manager of the DOE Albuquerque Operations Office (AL) has been delegated the responsibility and authority for the field management of the Monticello Projects. This authority has been delegated to the Manager of DOE Grand Junction Office (GJO) through the Assistant Manager for Environmental/Project Management.

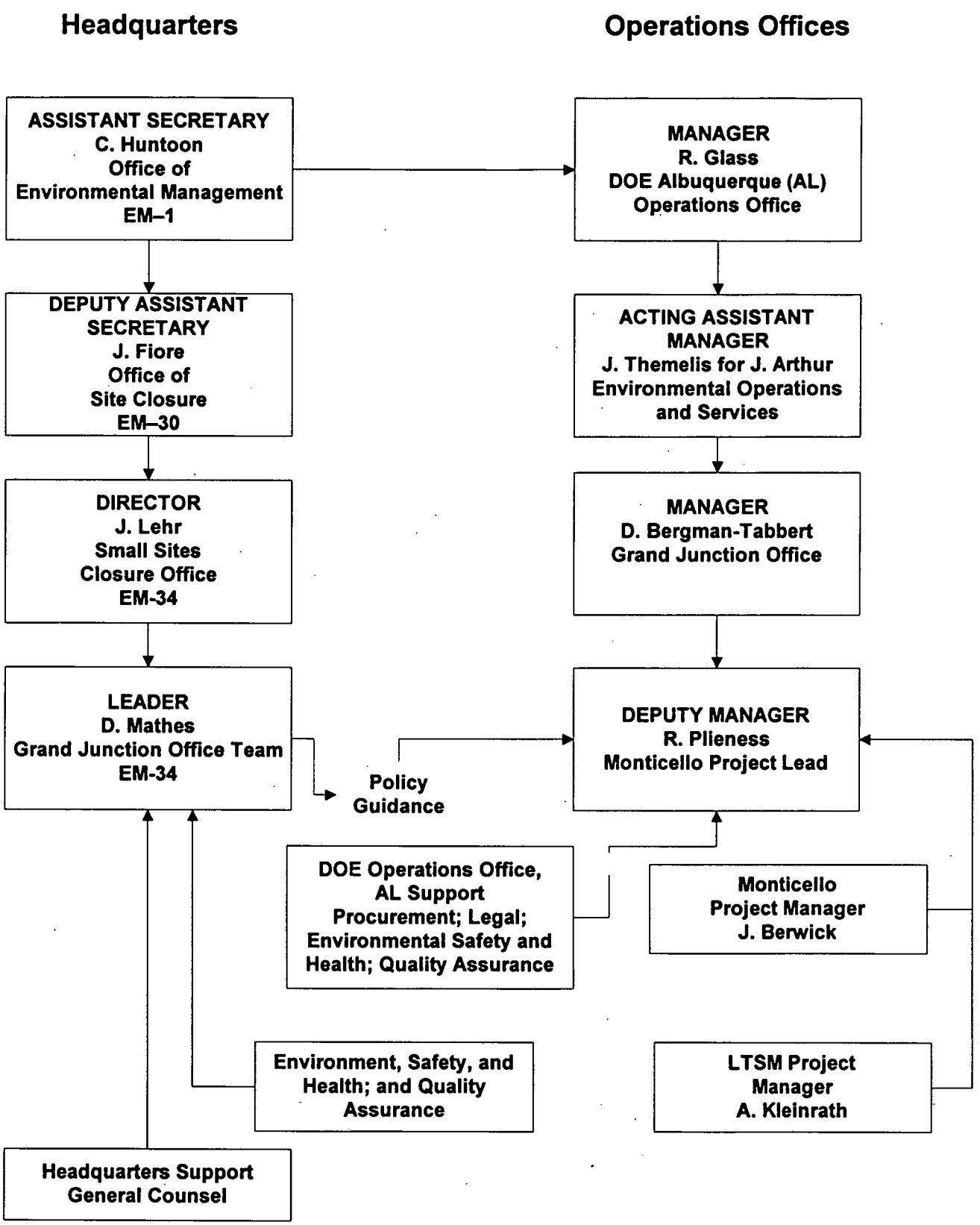

Figure 2–1. DOE Project Management Structure

The DOE–GJO Manager has been delegated the authority, responsibility, and accountability for overall project implementation and contract administration. The DOE–GJO Manager assigns the DOE–GJO Project Managers. With the completion of Monticello Projects, the MVP Project Manager, MMTS Project Manager, and Site Engineer responsibilities have been consolidated and are implemented by the Monticello Project Manager. The Project Manager is the DOE–GJO implementing official and has been delegated the authority from the DOE–GJO Manager for day-to-day implementation, management, and direction of the projects. The Monticello Project Manager also acts as the Project Coordinator for Monticello Project, as required by the FFA.

The Monticello Project Manager, acting as the Project Coordinator, is responsible for overall project integration and daily project coordination and fills the responsibilities of the Project Coordinator as defined in the FFA. The Project Coordinator is the formal GJO point of contact for EPA, UDEQ, and DOE–HQ for the Monticello Projects.

The GJO has also assigned matrix support for procurement, public affairs, health and safety, and environmental compliance to the Monticello Projects. The Office of Chief Counsel at DOE–AL is the legal advisor to the projects. Financial, procurement, and real estate management support is also provided by AL.

DOE–GJO has contracted with MACTEC Environmental Restoration Services, LLC (MACTEC–ERS) as the remedial action contractor (RAC). The RAC is responsible for ensuring that all remedial activities are executed in compliance with the FFA, regulatory, and health and safety requirements. The RAC Program Manager reports directly to the DOE–GJO Project Coordinator and Project Managers and has the ultimate responsibility for implementing the project scope and schedule defined by the DOE project management staff. The RAC has subcontracted remediation activities for OU I and associated Millsite peripheral properties to OHM Remediation Services Corporation (OHM). The RAC has subcontracted remediation activities on the vicinity properties and non-Millsite peripheral properties to several subcontractors. The DOE–GJO, through a cooperative agreement with the City of Monticello, will compensate the city for the restoration of the Millsite. DOE–GJO has provided funding for oversight of the restoration by the RAC. The RAC has assigned Project Managers to each of the Monticello Projects who report to the Program Manager and are responsible for the day-to-day implementation, management, and direction of the projects.

2.4 Management Review and Concurrence Process

Section XII of the FFA (DOE 1988b) establishes procedures to be used by DOE, EPA, and UDEQ for review, comment, and response to comments on documents established as secondary or primary documents. Primary documents include those reports that are major, discrete portions of the RI/FS or RD/RA activities. Secondary documents include those reports that are discrete portions of the primary documents and are typically input or feeder documents.

DOE–GJO is responsible for the preparation of primary and secondary documents according to established time schedules. DOE–GJO must simultaneously submit the documents to EPA and UDEQ. For both primary and secondary documents, EPA and UDEQ must provide comments within 60 calendar days unless otherwise agreed to by all parties.

DOE–GJO has 60 calendar days to respond to the comments by simultaneously sending a copy of the responses to EPA and UDEQ unless otherwise agreed to by all parties. For a draft primary document, a draft final primary document incorporating the comments is required, along with the comment responses. The draft final primary document will become a final primary document within 30 days unless dispute resolution is invoked. Historically, on Monticello Projects, additional comments have been received by DOE from EPA and UDEQ during the final review period and have been addressed by DOE in the submittal of a final primary document.

2.5 Routine Reporting Requirements

The FFA establishes that DOE shall submit monthly written progress reports to EPA and UDEQ. These reports describe the actions that DOE has taken during the previous month to implement the requirements of the FFA. The progress reports are required to be submitted on the 20th day of each month. The monthly report has been modified to include a description of issues that must be resolved for timely progress on the Monticello Projects and a list of documents expected to be submitted during the 2 to 3 months following the submittal of the monthly report. The monthly report will also include a calendar of upcoming field activities.

2.6 Meetings of the Project Managers

EPA, UDEQ, and DOE project managers will meet quarterly to review project progress and discuss issues. In addition to these quarterly meetings, the project managers may meet more frequently to review specific technical and compliance issues.

3.0 Project Objectives

The overall objective of remedial action at the Monticello Sites is to mitigate risk from exposure to hazardous substances from the Millsite and included peripheral and vicinity properties to levels that are protective of human health and the environment. Final remedies have been selected for the MVP Site and OUs I and II of the MMTS. Selection of a final remedy for OU III of the MMTS is in progress. The DOE must comply with ARARs while accomplishing project objectives and implementing selected remedies.

The objectives for each of the Monticello Projects are described in detail in this section.

3.1 Monticello Remedial Action Project

3.1.1 Operable Unit I—Millsite Tailings and Millsite Property

The objective for the remediation of OU I as defined in the ROD is excavation of tailings and other byproduct material and hazardous substances to levels protective of human health and the environment, modification or alteration of existing habitable structures to mitigate radon concentration, and disposal of those wastes in the on-site Repository. Five-year reviews will be required to evaluate the protectiveness of the remedy because contamination will be left on-site in the Repository. To implement the remediation, MRAP has established two major project objectives.

- *Achieve cleanup levels at the Millsite that are protective of human health and the environment.* The ROD established that remediation of concentrations of radium-226 to levels established in 40 CFR 192.12, can be used as a proxy for other metals contained in the ore and tailings because "... no transport mechanism has been identified that would account for the segregation and dispersal of one of the non-ore elements independently of others (DOE 1990b)." Therefore, cleanup deeper than that required to remove the radium-226 was not expected.

  Data were collected that indicated that heavy metals leached to depths greater than the radium-226 cleanup criteria. DOE has removed soils contaminated with elevated levels of uranium and vanadium to the extent practicable within the capacity limitation of the on-site Repository and assessed residual levels of contamination. The impact of residual contamination on groundwater and surface water quality will be assessed as part of the selection of a final remedy for OU III and the need for active groundwater restoration will be determined in a ROD addressing surface and groundwater.

- *Achieve the cleanup of hazardous substances that are not byproduct material.* Hazardous substances were encountered on the Millsite that were not byproduct material but presented a risk to human health and the environment above acceptable levels. The materials were remediated as required by the Special Waste Management Plan (DOE 1997c) which was concurred on among DOE, EPA, and UDEQ. DOE was required to remediate hazardous substances present in concentrations that present unacceptable risk to human health and the environment.

3.1.2 Operable Unit II—Peripheral Properties

The selected remedy for the remediation of OU II is to excavate tailings and concentrations of other byproduct material and hazardous substances to levels protective of human health and the environment and to temporarily store those wastes on the Millsite until final placement in the on-site Repository. DOE has completed the removal of uranium mill tailings and other hazardous substances that present an unacceptable risk to human health and the environment from the peripheral properties.

Although the MMTS ROD (DOE 1990b) states that the wastes removed from the peripheral properties will be placed on existing tailings piles, the MRAP Phase IIA for OU I, Millsite Pre-Excavation Final Design Report (DOE 1993b) established an alternate interim Repository south of the East Tailings Pile and east of the Acid Tailings Pile for storage of wastes removed from peripheral and vicinity properties. This design was approved by EPA and UDEQ in 1993. The revision to the selected remedy is not significant (as defined in the NCP) and does not require a ROD amendment or an Explanation of Significant Difference (ESD) .

Radiological contamination on peripheral properties was remediated to the standards established in 40 CFR 192.12 except where supplemental standards were applied as described below. Activities for OU II included remediation of nonradiological hazardous substances that posed an unacceptable risk. DOE remediated these properties as required by the Special Waste Management Plan (DOE 1997c) as described in Section 3.1.1 and the remedial designs.

For radiological contamination, if the cost of remediation or the adverse effects on the environment are excessive compared to the benefit of remediation, alternative cleanup levels and/or application of supplemental standards may be pursued. Supplemental standards allow for leaving in place contaminated material that is above the standards in 40 CFR 192.12. The following documents were approved by EPA and UDEQ allowing the application of supplemental standards:

- General Radiological Risk Assessments Method Document (DOE 1999b)
- Long-Term Surveillance and Maintenance Procedures for Supplemental Standards Locations (DOE 2000b)
- Explanation of Significant Differences for MVP and MMTS Records of Decision (DOE 1999a)
- MVP Application for Supplemental Standards—City of Monticello Streets and Utilities, (DOE 1999d)
- MVP Application for Supplemental Standards—Highways 191 and 666 Rights-of Way, (DOE 1999g)
- Application for Supplemental Standards (DOE 1999e and DOE 1999f)

- MMTS Operable Unit II Application for Supplemental Standards for Upper, Middle, and Lower Montezuma Creek—DOE ID Nos. MP–00951–VL, MP–00990–CS, MP–01084–VL, MG–01026–VL, MG–01027–VL, MG–01029–VL, MG–01030–VL, and MG–01033–VL, (DOE 1999h)

For OU II, the areas where supplemental standards have been applied are piñon/juniper woodlands, wetlands along Montezuma Creek, and steep, sage-covered hillsides where the high cost of remediation and loss of vegetation may not be warranted compared to the risks posed by the level of radiological contamination present. Implementation of supplemental standards for OU II requires long-term institutional controls on these properties. The institutional controls for OU II include deed annotations in the form of restrictive easements. The restrictive easements do not allow construction of habitable structures, restrict public use to day-use recreation, and state that no soils may be removed from the restrictive easement area. In addition, the DOE has implemented an LTSM program which will monitor conformance to the restrictive easements.

3.2 Monticello Vicinity Properties Project

The selected remedy for the remediation of the MVP Site was to excavate tailings and other byproduct material and concentrations of other hazardous substances to levels protective of human health and the environment, modify or alter existing habitable structures to mitigate radon concentration, and to temporarily store those wastes on the Millsite until final placement in the on-site Repository. Although the MVP ROD states that the wastes removed from the vicinity properties will be placed on the East Tailings Pile, the MRAP Phase IIA for OU I, Millsite Pre-Excavation Final Design Report (DOE 1993b) established an alternate Interim Repository (described for OU II) that would be used to store wastes removed from vicinity properties. The revision to the selected remedy is not significant (as defined in the NCP) and does not require a ROD amendment or an ESD.

OU D properties contained nonradiological hazardous substances that required remediation. DOE remediated these properties as required by the Special Waste Management Plan (DOE 1997c) (see Section 3.1.1) and the remedial designs.

Supplemental standards were also applied on vicinity properties. DOE submitted several documents to support the application of supplemental standards (see Section 3.1.2) which were approved by the EPA and UDEQ. In addition to one privately owned property and four properties along the U.S. Highway 191 embankment, supplemental standards were applied on streets and utilities in the City of Monticello rights-of-way, and U.S. Highways 191 and 666 rights-of-way (see Section 1.1.4.2, Operable Unit H).

3.3 Monticello Surface- and Ground-Water Remedial Action Project

The primary object of MSGRAP is to determine if, following Millsite excavation and implementation of the OU III IRA, contaminated groundwater and surface water continue to pose a future potential unacceptable risk to human health and the environment. If an unacceptable risk is identified, then a final remedy will be selected for controlling any unacceptable risk that complies with the ARARs.

End of current text

4.0 Project Tasks

This section presents the major tasks, compliance requirements, document submittals, and cost and schedule information through deletion of the sites from the NPL. This section does not address LTSM, which is discussed in Section 6.0.

Figure 4–1, the Monticello Projects Logic Flow Diagram—Project Overview, shows major activities and interrelationships of activities leading to the deletion of the sites from the NPL. The Project Overview provides the framework to understand more detailed logic networks for OU I and OU III of the MMTS. Logic networks have not been prepared for OU II of MMTS and the MVP Site because the activities on these OUs are not complex.

4.1 Operable Unit I—Millsite Remediation and Repository Construction

OU I consists of three major tasks. The first task, Millsite Remediation, includes those activities necessary for remediation of the Millsite: construction of the Repository; excavate, load, haul the tailings and contaminated material; placement of tailings and contaminated material in the on-site Repository; interim grading of the Millsite; and Repository site restoration. All items listed have been completed; however, success of reseeding of the repository cannot yet be determined.

The second task, Millsite Restoration, includes those activities necessary to restore the Millsite to an acceptable land use. Millsite Restoration design is complete. DOE and the City of Monticello have entered into a Cooperative Agreement wherein the City of Monticello will complete the Millsite restoration construction effort with support from DOE. DOE has paid the city a lump sum for completing the work. Transfer of funding to the City was contingent on transfer of the ownership of the Millsite and several adjacent properties to the City. The land transfer effort is complete. On August 23, 2000, the City of Monticello selected a subcontractor to perform the work.

The third task, Operable Unit Completion, addresses those activities necessary to document that cleanup activities were conducted in accordance with the ROD for OU I. A Remedial Action Report (RAR) will be prepared for OU I and will include most of the OU II properties adjacent to the Millsite. DOE will propose deletion of OU I and the OU II Millsite properties from the NPL after all construction, including restoration, is completed.

Figure 4–2, the OU I Logic Flow Diagram, shows the interrelationships of these phases of OU I..

4.1.1 Task Descriptions

4.1.1.1 Millsite Remediation

Millsite Remediation Design

The design for Millsite Remediation was completed in 1995. This task involved the preparation of a design for the removal and disposal of tailings from the Millsite to an on-site Repository and preparation of supporting specifications and drawings. The primary focus of the design effort was to achieve compliance with ARARs established in the ROD. Protection of a shallow

groundwater system under the Repository site was a primary driver in the development of the design.

The Repository liner system has been designed to be equivalent to the minimum technology requirements established in the Resource Conservation and Recovery Act (RCRA) for containment of hazardous wastes in a landfill. The Repository has been designed with two cells, each of which has a leachate collection and a leak detection system. Leachate drains to collection sumps in each cell and is pumped from the Repository to Pond 4. During construction, this water was used for dust control or moisture conditioning in the Repository or pumped to the WWTP for treatment. After all contaminated areas in the Repository are covered, the leachate will be retained in Pond 4 and will be left to evaporate.

The Repository cover has been designed to limit infiltration using a water balance cover and installation of a 60-mil thick high density polyethylene (HDPE) liner. The leakage rate through the cover has been designed to be less than the leakage rate through the bottom liner system. The cover, which includes a specially designed radon barrier, will control radon emissions from the Repository so that they meet applicable regulatory requirements.

Procurement of Repository and Millsite Remediation Subcontractor

The Millsite Remediation Design, Specifications and Drawings, along with supplemental information, were attached to a Request for Proposal, which was advertised in the Commerce Business Daily. Three proposals were received and OHM was selected as the Repository and Millsite Remediation Subcontractor. The subcontract also included remediation of peripheral property phases MP–00211 Phase II; MP–00181 Phases IB, II, and IV; MP–00179 Phases III and IV; MP–00391 Phase IV; and MP–01042.

The Notice of Award was September 8, 1995. After required document submittals were received and accepted by the RAC, the Notice to Proceed was issued October 27, 1995. Repository excavation started November 6, 1995.

Repository Construction

The on-site Repository is the final disposal site for tailings and contaminated materials removed from the Millsite and tailings-contaminated soil from vicinity and peripheral properties. The major steps for Repository construction included excavation, liner installation, tailings placement, cover construction, and site regrading and revegetation. All tasks have been completed; however, not enough time has elapsed since reseeding to ascertain the success of revegetation. Repository construction was completed on June 30, 2000.

Repository excavation was completed in June 1996 and required the removal of approximately 1.6 million yd^3. Material excavated from the Repository was placed in stockpiles near the excavation. Topsoil, select fill, and random fill were selectively handled and placed in separate stockpiles. The select fill was used for construction of the soil layer under the liner and for cover construction. The random fill was used for construction of Repository berms. Topsoil was used as the final layer on the cover.

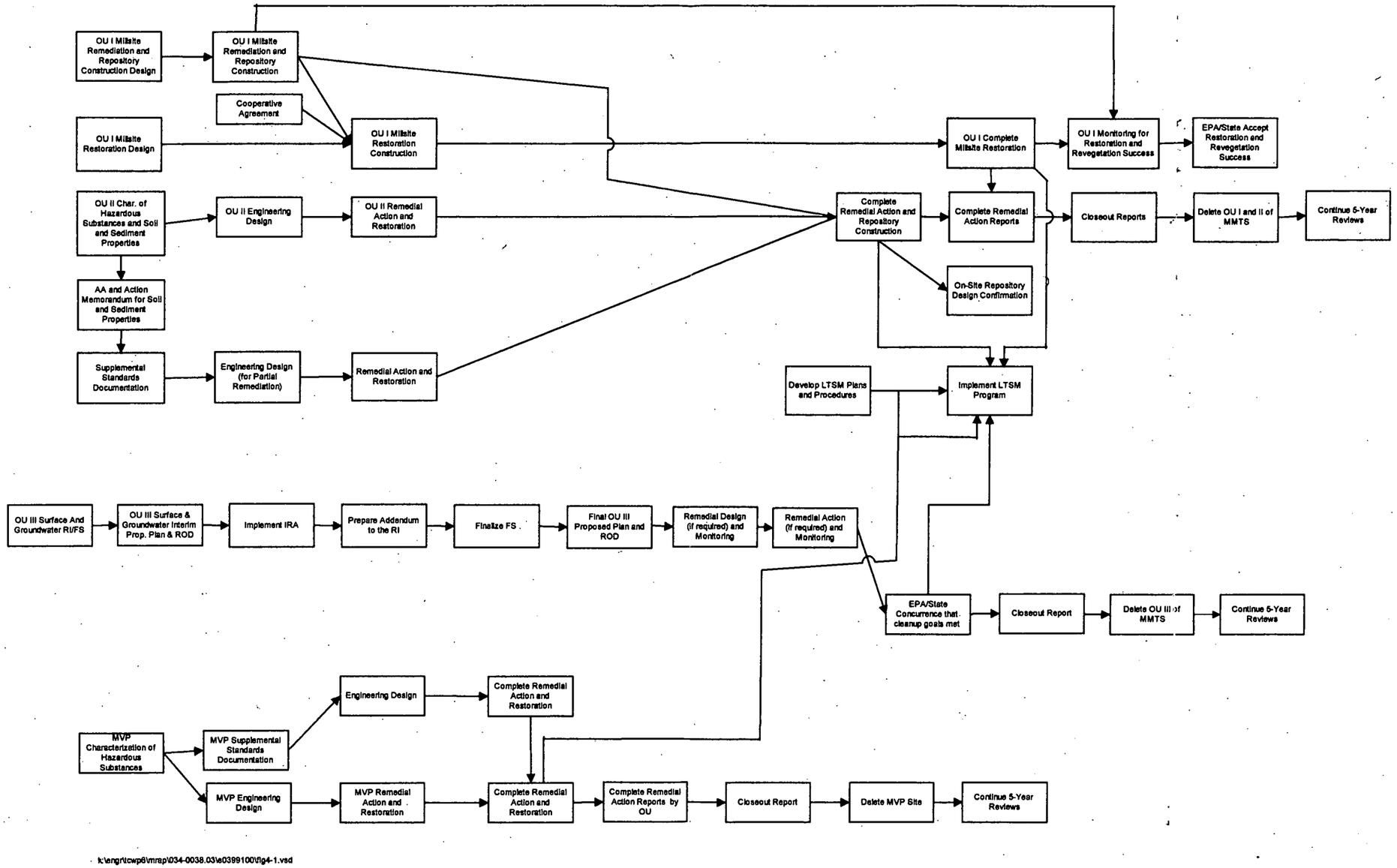

Figure 4–1. Monticello Projects Logic Flow Diagram—Project Overview

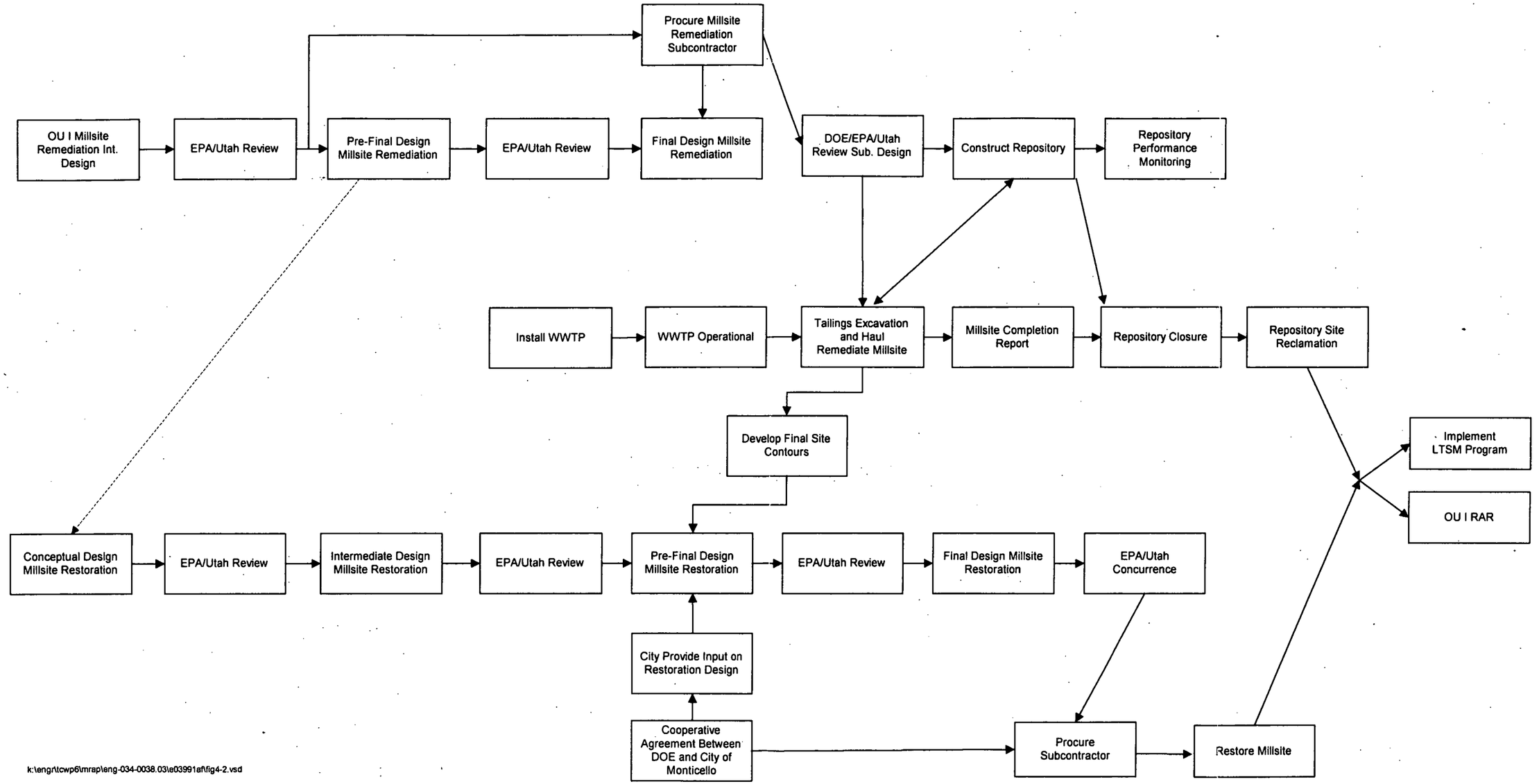

Figure 4–2. OU I Logic Flow Diagram

The Repository liner system was completed in November 1996. The sand drainage layer of the leachate collection system was completed July 1997. From the bottom to the top, the liner system consists of geosynthetic clay liner (GCL), 60 mil HDPE, geonet with heat bonded geotextile, GCL, 60 mil HDPE, geonet with heat bonded geotextile, and on the bottom of the Repository, a drainage sand layer. The leak detection system (LDS) is composed of the lower liner and geonet and the leachate collection and removal system (LCRS) is composed of the upper liner, geonet, and sand drain layer. The bottom of the Repository has been sloped to allow drainage in the LCRS and LDS to two sumps on the north side of the Repository. Piping connects the sumps to the surface and pumps are used to remove leachate from the sumps to Pond 4.

In the spring of 1997, the amount of leachate collecting in the LDS sumps became a concern and investigations for the source of the leachate were conducted throughout the summer. Dye testing was conducted to determine if there were hydraulic connections between the LCRS and the LDS and anchor trenches. Electrical conductivity testing and visual inspections were performed over most of the Repository floor to find leaks. A total of 19 leaks were found and repaired. Inflow into sump 1 of the LDS dropped from 1.3 gallons per day to 0.4 gallons per day and inflow into sump 2 dropped from a maximum of 190 gallons per day to 43 gallons per day by December 1997.

During Repository construction, strict construction QC and QA programs were implemented. The QC program was conducted by the Millsite Remediation Subcontractor, and the QA program was conducted by the RAC through procurement of an independent firm for the liner installation in both the Repository and Pond 4 and the cover. Other QA activities were conducted by the RAC, such as moisture testing in the tailings and particle size distribution in the operations layer adjacent to the liner. QC/QA was critical to ensuring that the Repository was constructed according to specifications so that Repository performance requirements are met.

Pond 4

Pond 4 is located to the east of the Repository. It is designed to collect leachate that drains from the tailings and that is collected in either the LCRS or LDS. Construction of the pond is complete. The pond has been sized to operate as an evaporation pond with a capacity of 55 acre-feet (18 million gallons) and has a triple liner system to ensure protection of underlying groundwater. Design features of Pond 4 include a HDPE/GCL composite primary liner overlaying a geonet LCRS that is on top of a secondary liner overlaying a geonet, which in turn is on top of a HDPE/GCL composite tertiary liner. The LCRS is designed to collect any leakage passing through the upper-most liner. The LDS should collect any leakage passing through the second liner. A 5 gallon per minute pump pumps fluids collected in the LCR sump back into Pond 4. Automatic controls turn on the LCR pump at a normal high-water operating level in the LCR sump, record the cumulative volume of fluids pumped, record times when fluids are pumped, activate an alarm when the maximum high-water level is reached in the LCR sump, and provide remote status and control capabilities to a local maintenance person who can monitor and correct any operational problems that occur. The most important feature of the system is that, if a problem occurs in the primary liner system that cannot be controlled with the LCR pump, the pond can be pumped dry and the liner repaired.

Pond 4 will remain in use until drainage from the Repository reaches quantities that can be more cost effectively handled by using other methods such as pumping the leachate to a tank for off-

site treatment. The pond will then be decommissioned and contaminated materials will be hauled to an offsite disposal facility.

Ancillary Facilities

Construction of the repository and hauling the tailings have required construction of several ancillary facilities. The Repository access area consists of offices and a parking area that were established on the west end of the Repository site during the 1995 construction season. These facilities provide office space for the DOE staff and employees of the RAC and Millsite Remediation Subcontractor. Acceleration and deceleration lanes were constructed on U.S. Highway 191 to improve traffic flow into and out of the facility. The access area also contains the TSF that will be used by the LTSM Program and contains the office trailer for the DOE On-Site Representative.

A haul road, approximately a mile long, was constructed between the Millsite and the Repository for tailings transport. Tailings were not hauled on public roads from the Millsite to the Repository because of public safety concerns and decreased haul efficiency. Decontamination pads were constructed at either end of the road but were abandoned after the first year of use and have now been removed. Control fencing was installed along the perimeter of the road, and drainage from the haul road is controlled by ditches and berms. A decontamination facility, constructed at the Repository access area for vehicles accessing U.S. Highway 191 from the Repository, has been dismantled.

During construction and restoration of the Repository and the surrounding disturbed areas, runoff is controlled with a series of ditches that direct water to sedimentation basins. A stormwater pollution prevention plan detailing the design, construction, and operation of the runoff control system was prepared by the Millsite Remediation Subcontractor and accepted for construction by the RAC. These ditches and basins have been designed to contain the 25-year, 24-hour storm event. After consultation with UDEQ in 2000, the decision was made to leave the sedimentation basins in place.

Fences have been constructed around the Repository and Pond 4 to keep wildlife from walking on the liners and puncturing them and to restrict unauthorized access to the site. Wildlife gates have been placed in several corners to release animals that may inadvertently enter the area during operations. A deer was trapped in the fenced area in 1996 and was not able to escape through the wildlife gates. As a result, the gates were adjusted to ensure that they performed as required. In 1997, the height of the fence around Pond 4 was increased to 10 ft because deer were able to jump the fence when it was only 8 ft high.

Wastewater Treatment Plant

A transportable WWTP was set up at the Millsite. The plant was tested according to a plan submitted to EPA and UDEQ in February 1995 and was put into operation in May 1995. The plant treated water from Pond 3, which was fed by a network of ditches on the Millsite to control runoff and transport excavation water to Pond 3. In 1998 and 1999, the plant also treated water from Pond 4. Discharge from the plant had to meet the requirements of the UPDES regulations. Discharge from the WWTP in 1995 met the UPDES requirements; however, selenium concentrations were very near the allowable limits. As a result, the plant was modified in 1996 to

include an activated alumina treatment process to improve selenium removal to less than the UPDES requirement of 0.012 milligrams per liter. Because the selenium removal process required the use of barium chloride to remove excess sulfates, a sodium sulfate injection system was added to precipitate barium after the activated alumina treatment and then a filter system added to remove the barium sulfate. This system was tested in October 1997 and failed because the filter clogged in under 5 hours.

Pilot and laboratory scale testing was conducted in January 1998 to determine if there were any further treatment options available for treating water to meet UPDES effluent limitations. Addition of a clarifier or microfiltration system was evaluated for removal of the barium sulfate. RO and nanofiltration were tested for use either with the existing plant or as a separate treatment system. A new technology, the use of ZVI was investigated for removal of selenium instead of activated alumina. ZVI does not require the removal of sulfates and therefore does not require the addition of excess barium. Testing this system was not successful because adequate flow through the ZVI columns could not be achieved along with adequate resident time to remove selenium.

Installation of an RO unit was selected because of reliability and ability of the system to remove contamination to UPDES standards for both selenium and TDS. The brine waste stream generated by the RO was used for dust control in the Repository and on contaminated areas on the Millsite and was placed in Pond 4. The RO unit was occasionally used by itself, but more often, the discharge from the RO was blended with effluent from Trailers 1 and 2 of the existing WWTP to reduce selenium and TDS concentrations. Operation of the WWTP was ceased in May 1999, after treating approximately 50,000,000 gallons.

Tailings Removal and Placement

Millsite tailings were excavated, loaded into haul trucks, and hauled to the on-site Repository. Dust suppression was practiced during all aspects of tailings removal. Radon emissions were monitored demonstrating that acceptable limits were not exceeded during remedial action. With notification of EPA and concurrence by UDEQ, DOE discontinued the air-monitoring program in Monticello in March 2000.

Tailings removal started with the removal of the Carbonate Tailings Pile. The Carbonate Tailings Pile was the first layer in the Repository to protect the liner when larger debris was placed in the Repository. Material from the Vanadium Pile and Acid Pile were also used to construct this protective layer. Placement of tailings and tailings-contaminated soil was completed September 22, 1999, with the exception of contamination associated with the decontamination pad near the Repository. The contaminated material associated with the decontamination pad near the Repository was transported to DOE's Grand Junction Disposal Cell in January 2000.

A large volume of the tailings removed were below the groundwater surface. Water from excavations was used for dust control in contaminated areas or transported to Pond 3 for treatment and subsequent release to Montezuma Creek or pumped to Pond 4. The moisture content of the tailings was managed to ensure that compaction specifications were met in the Repository. Mixing wet tailings with drier tailings was conducted to meet specifications. Tailings that were dry required the addition of water to ensure that optimum moisture conditions were attained to meet compaction requirements.

Removal of tailings was verified in accordance with DOE's Verification Plan (DOE 1998c). Peripheral properties were verified using large area verification techniques, the 78-acre tailings area was verified using the 100 square meter procedure. DOE conducted independent verification on a portion of the excavation through an independent verification contractor (IVC).

Following tailings removal and verification, the site was backfilled, as necessary, and graded for erosion control to ensure drainage of the site. Backfilling and grading necessary to meet the final design for restoration of the Millsite will be conducted as part of the Millsite restoration phase.

Repository Cover Construction

Construction of the cover was substantially completed on February 23, 2000. Construction of the cover progressed from west to east with the work generally divided into 4 quadrants of construction. The cover consists (from the bottom to the top) of a radon barrier, 60 mil HDPE, sand drainage layer, geotextile, fill, biointrusion layer, fill, and topsoil and gravel admixture in the top 8 in. of topsoil. The number of layers in the cover decreases over the berms and consists of a bedding/filter layer, covered with topsoil and a gravel admixture or a riprapped slope. QA samples of the soil materials and HDPE layer have been taken to ensure that the material placed meets specification. Material that did not meet specification was not used, such as the HDPE. Placed material not meeting specification was removed and replaced with material meeting specification, such as occurred with some of the fill material.

Repository Site Restoration

Reclamation of areas disturbed as a result of construction activities at the repository commenced. The Millsite Remediation Subcontractor has completed the following reclamation activities:

- removal of support facilities such as office trailers and decontamination facilities, the staging areas will remain along with two of the trailers to support LTSM activities;
- grading of disturbed areas to ensure that reclaimed land contours blend with adjacent undisturbed land areas;
- seed bed preparation for areas being reclaimed; and
- revegetation.

Removal of the haul road fill on North Draw will be conducted by the City of Monticello. Material will be used for backfilling the Millsite. Subsequent reclamation of the haul road corridor will also be conducted so the land contours and vegetation will blend in with the surrounding terrain.

Performance Monitoring

Repository performance will be confirmed by monitoring leachate volume in the primary LCRS and by monitoring leachate quantity and quality in the secondary LDS. Criteria for allowable leachate volume and quality have been established as measurements of acceptable Repository

performance in the Contingency Plan (DOE 1998d). The cover will be inspected to evaluate vegetation growth, erosion, rodent activity, and other characteristics that may indicate compromise of cover integrity.

Following completion of the project, the Repository will be placed in DOE's LTSM Program. A detailed explanation of LTSM activities is contained in Section 6.0.

4.1.1.2 Millsite Restoration

Millsite Restoration Design

Millsite Restoration Design presents the plans for restoring the Millsite after remediation was completed. Because of proximity of the Millsite to the City of Monticello, the City showed substantial interest in the property. DOE has signed a Cooperative Agreement with the City wherein the City will conduct Millsite restoration associated with realignment of Montezuma Creek and associated wetlands according to a design approved by DOE. Areas outside of the creek corridor and wetlands will be the responsibility of the City to restore. At a minimum, the City will be required to ensure that activities outside of the corridor do not adversely affect the success of the wetlands restoration or stream channel reconstruction. The DOE has paid the City a lump sum for completion of the Millsite restoration. The City must complete the work according to the milestones established in Section 5 of this SMP.

Preparation of the Final Design is complete. The DOE approved a design prepared by the City's subcontracted design firm for the creek corridor and wetlands restoration. The Final Design was concurred upon by EPA and UDEQ, and a construction firm was selected by the City on August 23, 2000. To ensure that the City's goals for recreational use of the land can be met within the funding that will be provided, DOE has provided funding for the RAC to oversee the City's restoration contractor.

Millsite Restoration Construction

The construction firm selected by the City of Monticello initiated restoration activities in August 2000 in accordance with the Final Design. The portion of the Millsite restoration that must be completed by the milestone dates established in Section 5 includes the following activities:

- Backfill Placement: Sufficient backfill must be placed to achieve an acceptable gradient for the creek channel and sufficient area and depth of saturated subsurface soils to ensure the success of wetlands vegetation.

- Montezuma Creek Realignment and Erosion Control: Creek realignment will involve reestablishment of the creek channel to its approximate pre-mill location, but not necessarily reestablishment of all original meanders. Erosion control measures will be implemented to stabilize the channel through the Millsite.

- Topsoil Placement: Topsoil will be placed to provide an environment for wetland plantings and seed to root and obtain nutrients.

- Wetlands: Wetland areas on the Millsite will be reestablished with plantings and, if necessary, seedlings to restore vegetation.

4.1.1.3 Operable Unit Completion

After all construction activities are complete, a RAR will be prepared documenting that all of the necessary activities took place and cleanup standards achieved as required by the ROD. The RAR for OU I will include OU II groundwater-related properties. Section 4.5.1.6 provides information on the content of the RAR and how it supports the deletion process.

4.1.2 Applicable or Relevant and Appropriate Requirements

Compliance with ARARs established in the ROD is addressed in the design documents. The designs identify each ARAR and specific design requirements or construction procedures to achieve compliance.

The Repository has been designed to be protective of human health and the environment and to meet all ARARs. This is substantiated by leakage rate calculations submitted with the design documents. DOE has shown that the design will achieve compliance with ARARs through performance calculations and will demonstrate performance by monitoring the LCRS and LDS.

The restoration design addresses all ARARs as necessary to demonstrate compliance.

Substantial effort has been made to demonstrate compliance with wetlands restoration requirements. A Wetlands Master Plan (DOE 1996c) was prepared which provided an inventory of all wetlands that would or could be impacted by remedial action activities. The Plan also provided specific restoration requirements such as seed mixes and planting requirements that would have to be implemented to restore wetlands. Several acres of wetlands will be restored on the Millsite to replace wetlands currently present on the Millsite and wetlands that could not be replaced in-situ on other properties. An addendum to the Wetlands Master Plan applicable to the Millsite restoration effort was prepared and submitted with the Pre-Final Restoration Design.

Several activities have been conducted subsequent to the Millsite Remediation design effort to ensure compliance with ARARs for OU I. These additional activities are listed below.

- A survey was conducted of the areas affected by Millsite Remediation to ensure that there were no threatened, endangered, and sensitive (TES) species requiring special protection. A report summarizing the results of a TES species survey of lands disturbed by Millsite Remediation activities was submitted in July 1995; TES species were not identified.

- An archaeological mitigation effort along the haul road was conducted in accordance with a plan reviewed and approved by the State Historic Preservation Officer. The mitigation plan was submitted May 1995. A report was submitted to the State Historic Preservation Officer summarizing the results of the archaeological mitigation effort in June 1996. Copies of the mitigation plan and results of the mitigation effort were also submitted to EPA and UDEQ.

- During Repository construction, control of fugitive dust emissions was required. In noncontaminated areas, UDEQ opacity standard of 20 percent for fugitive dust was met. In contaminated areas and during the placement of tailings, specifications required no visible dust emissions.

- Compliance with control of storm water runoff was achieved by implementing the Millsite Remediation Subcontractor's storm water pollution prevention plan. Ditches and sedimentation ponds have been constructed to control storm water runoff.

4.1.3 Document Submittals

The following is a list of major documents that have been or will be submitted for OU I since the ROD was signed in August 1990:

OU I Millsite Remediation Final Design: This design was submitted to EPA and UDEQ in July 1995. It incorporated comments from EPA and UDEQ on the Intermediate and Pre-Final Designs. Performance specifications were also included in the Pre-Final document for all aspects of Millsite remediation and Repository construction. The Pre-Final Design was used to obtain subcontractor bids.

Contingency Plan: The *Draft-Final Monticello Remedial Action Project Repository and Pond 4 Groundwater Contingency Plan* (DOE 1998d) has been developed for OU I to address actions that may be taken if the Repository does not perform as planned. The Contingency Plan is a stand-alone document that identifies possible failure mechanisms at the Repository and proposed response actions specific to these failure mechanisms. Conditions that trigger implementation of the contingency plan are discussed in the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2000c). See Section 6.0 for a discussion on LTSM plans.

Explanation of Significant Difference (ESD): In March 1995, DOE prepared an ESD for OU I to address the increase in the total project cost. The ESD was made available for public review and comment in April 1995. No comments were received.

Repository Access Area Design: This document was submitted to EPA and UDEQ in April 1995. It addressed access off of U.S. Highway 191 and the office facility layout.

OU I RD/RA Work Plan: The OU I RD/RA Work Plan was submitted on April 27, 1995. The Work Plan provided a detailed description of the activities and the schedules presented in the SMP. The schedules in the OU I RD/RA Work Plan are superseded by the schedules presented in this revision of the SMP.

Haul Road Design: The haul road design prepared by the Millsite Remediation Subcontractor was initially transmitted to EPA and UDEQ in April 1996.

Decontamination Pad Design: The decontamination area design has been submitted in three parts by the Repository and Millsite Remediation Subcontractor. These designs were initially transmitted to EPA and UDEQ in June and July 1996. Comments on the designs from EPA and

UDEQ were received and incorporated into the revised design and as-built drawings were submitted in July 1997.

Millsite Restoration Design: DOE submitted a Conceptual Design for Millsite Restoration on December 24, 1996. The conceptual design consisted of two site Plans (one each for natural and golf course style restorations), a brief description of design approach, calculations, a sample vegetation specification, and a quantity summary.

An Intermediate Millsite Restoration Design was submitted in April 1999 as a secondary document for EPA and UDEQ review. As described in Section 4.1.1.2, a Pre-Final Design was prepared by DOE on the realignment of Montezuma Creek and reestablishment of wetlands. Restoration of the remaining lands on the Millsite and adjacent peripheral properties affected by Millsite remediation will be the responsibility of the City of Monticello.

Covenant Deferral Request: DOE submitted the *Final Covenant Deferral Request for Transfer of Federal Property in Monticello, Utah* (DOE 2000a) to the Governor of the State of Utah and to EPA Region 8 Regional Administrator in February 2000. The request to defer the CERCLA covenant requiring all of the response actions to be completed prior to transferring the property to a non-federal agency was approved, thereby allowing transfer of the property to the City of Monticello for beneficial public use.

Long-Term Surveillance and Maintenance Plans and Procedure: A draft *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2000c) was submitted to the EPA and UDEQ in 2000. This manual is a compendium of plan, procedures, and documents intended to implement the overall LTSM requirements associated with the MMTS and MVP Site. Operating procedures identified in the Administrative Manual include the following:

- *Monticello Long-Term Surveillance and Maintenance Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite* (Volume I) (DOE 2000d). These procedures were submitted in draft form to the EPA and UDEQ in 2000 and are anticipated to be finalized in FY 2001.

- *Long-Term Surveillance and Maintenance Operating Procedures for Monticello Supplemental Standards Properties* (Volume II) (DOE 2000e). These procedures were submitted in draft form to the EPA and UDEQ in 2000 and are anticipated to be finalized in FY 2001.

- *Long-Term Surveillance and Maintenance Operating Procedures for Monticello Surface and Ground Water* (Volume III) (DOE 2005). These procedures will be submitted after the ROD of OU III is finalized in 2005.

- *Long-Term Surveillance and Maintenance Operating Procedures for Annual Inspections and CERCLA 5-Year Reviews* Volume (IV) (DOE 2001). These procedures will be submitted in FY 2001.

Completion Report: A completion report will be prepared for the Millsite. This report is expected to be similar in content to the reports prepared for vicinity and peripheral properties (see

Section 4.2.1 for a description of these reports). Verification data will be provided for radiological contaminants remediated.

Remedial Action Report: This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. See Section 4.5.1.6 for additional information on the content of an RAR and deletion of the MMTS from the NPL.

4.1.4 Schedule and Funding

DOE's goal, as reflected in the schedule provided, is to complete Millsite remediation and restoration by July 17, 2001. To attain this goal, DOE began cell excavation November 1995 and lining of the cell began in June 1996. Tailings placement began on June 5, 1997, and was completed along with placement of all contaminated soils except those associated with the Repository access area decontamination pad by September 30, 1999. Contaminated soils associated with the Repository access area decontamination pad were placed in the Grand Junction , Colorado disposal cell (formerly known as the Cheney disposal cell) in January 2000. Repository cover construction started in 1999 and was substantially completed on February 23, 2000. Repository construction, including reseeding, was completed June 30, 2000. Millsite restoration will begin in 2000, and is expected to be complete July 17, 2001.

The costs for the Monticello Projects are shown in Appendix C. These costs reflect definitive estimates to rough order-of-magnitude estimates and may change as the construction proceeds and designs are finalized. The funding levels shown in Appendix C are expected to meet project requirements.

4.2 Monticello Remedial Action Project: Operable Unit II—Peripheral Properties

Originally, OU II consisted of 29 properties with activities on these properties consisting of characterization of contamination, remedial action design, procurement and construction, verification, and completion report preparation. After remediation of the properties in OU III where contaminated soil and sediment along Montezuma Creek were present, the decision was made to include the portion of OU III soil and sediment properties into OU II. There were eight OU III soil and sediment properties, three of which portions were already included in OU II. As part of OU III, a remedial investigation and AA of the soil and sediment properties were conducted. The decision to conduct a non-time-critical removal action was documented in an Action Memorandum and the removal action was implemented. Since the removal action was similar in nature to the remedial actions conducted on OU II properties, the decision was made to document the removal action as the final selected remedy in an ESD to the MMTS ROD for OU I and OU II (DOE 1990b). The decision was also documented in the applications for supplemental standards for these properties. Closeout documentation for these properties was prepared as part of OU II. This section includes reference to the documents prepared when the properties were included in OU III up through the removal action stage. After that time, the OU III soil and sediment properties are included in the OU II closeout documents.

Remedial action has been completed on all OU II properties, however, there is some on-going restoration work which will be completed in FY 2000.

4.2.1 Task Descriptions

Field Characterization for Original OU II Properties

Characterization of the extent of radiological contamination on the peripheral properties was conducted in support of the *Final Remedial Investigation/Feasibility Study-Environmental Assessment for the Monticello, Utah, Uranium Mill Tailings Site* (DOE 1990a).

Characterization and Remediation of Hazardous Substances Other Than Radium-226

Investigations were conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and require remediation or special handling as a hazardous waste. For the peripheral properties, these investigations were conducted on the U.S. Bureau of Land Management (BLM) Compound (MP–00181 Phase I), on MP–00181 Phase IVA/MP–00211 Phase II where the Millsite analytical lab was located and fuel spills were identified, and on MP–00990 where waste oils were spilled along with other potential contaminants. Nonradiological substances released to the environment requiring remediation beyond the extent of radiological contamination have not been identified on MP–00181 or MP–00211. Although nonradiological hazardous substances have been identified on MP–00990, EPA and UDEQ agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part, the decision was made because of the ongoing operations on this privately owned property.

Nonradiological hazardous substances that meet the Repository waste acceptance criteria were placed in the on-site Repository with EPA and UDEQ approval. Hazardous substances that could not be disposed of in the on-site Repository were shipped to off-site, permitted commercial treatment, storage, and disposal facilities that met the CERCLA off-site response requirements of the NCP.

DOE's responsibilities for remediation of nonradiological hazardous substances were fulfilled when the nonradiological contamination identified in approved work plans was removed and verification samples showed contamination below cleanup standards (State of Utah 1997). During remediation, DOE implemented the Special Waste Management Plan (DOE 1997c) as required and provided verification data demonstrating that contamination was removed to cleanup standards. DOE was not responsible for ongoing or future releases on the properties not identified in approved work plans or recorded as required by the Special Waste Management Plan (DOE 1997c). If radiological contamination for which DOE was responsible (such as could have been discovered during remedial action on any property) became mixed with hazardous waste by any mechanism, DOE was responsible for the resultant mixed waste.

Field Characterization for Soil and Sediment Properties along Montezuma Creek

Characterization of the nature and extent of contamination in contaminated soil and sediment along Montezuma Creek was required to determine if the contamination presented an unacceptable risk to human health and the environment. An OU III RI/FS Work Plan (DOE 1995a) was prepared by DOE proposing the characterization activities required to determine the nature and extent of contamination. EPA and UDEQ concurrence on the RI/FS Work Plan was not obtained; however, DOE proceeded with the characterization activities at risk. Characterization activities have included assessing concentrations of contaminants of concern in sediments and soils.

Prepare Risk Assessments for Soil and Sediment Properties

A Human Health Risk Assessment and Ecological Risk Assessment were prepared to evaluate the risk to human health and the environment from contamination in soil and sediment along Montezuma Creek. The human health risk assessment is based on land-use scenarios concurred on among DOE, EPA, and UDEQ in various meetings. The risk assessments were submitted as secondary documents and were revised and submitted with the draft-final RI report.

Prepare Remedial Investigation Report for Soil and Sediment Properties

The draft-final RI report (DOE 1998b) was prepared to document the results of the site characterization and risk assessments in accordance with established EPA guidelines. The RI report discusses the nature and extent of contamination, contaminant fate and transport and incorporates the human health and ecological Baseline Risk Assessment (BLRA) report. An ARARs evaluation is identified in an appendix to the RI report. The RI report (DOE 1998b) was finalized in September 1998. By accepting the final RI report, it is implicit that previous issues on the RI Work Plan are resolved.

Prepare Alternatives Analysis for Soil and Sediment Properties

A detailed AA (DOE 1998a) was performed to assess potential remedies for mitigation of any unacceptable risks identified in the BLRA. The alternatives evaluated for various segments of Montezuma Creek, were (1) no action, (2) institutional controls, including land purchase by DOE, (3) partial remediation of areas of elevated gamma readings, (4) remediation to standards in 40 CFR 192.12 over selected areas, and (5) remediation to the standards in 40 CFR 192.12 along the entire creek. The draft-final AA analyzed each alternative on the basis of meeting the two threshold criteria and the five balancing criteria or CERCLA criteria.

The AA meets the requirements of an EE/CA for non-time-critical removal actions and was used to document the evaluation of removal actions considered as remedies for Upper, Middle, and Lower Montezuma Creek.

Selection of the Preferred Remedy for Remediation of Soil and Sediment

DOE prepared a Fact Sheet summarizing the AA and describing the recommended remedy and provided the fact sheet for public comment. The AA was placed in the Administrative Record for

public review during the comment period. A public meeting was held to discuss the preferred remedy and obtain input from the public. Concurrence was reached among the DOE, EPA, and UDEQ on the preferred remedy, and an Action Memorandum prepared for the preferred remedy, which was a non-time-critical removal action. The preferred remedy was also discussed in the OU III ROD for an IRA (DOE 1998e).

Supplemental Standards Applications

Supplemental Standards applications were prepared for OU II properties where remedial action resulted in excessive environmental damage. These properties are located on the hillsides to the south of the Millsite where there are thick piñon/juniper stands and along Montezuma Creek for the soil and sediment properties where wetlands are present. The supplemental standards applications establish alternative action levels protective of human health and the environment for specific exposure scenarios. The applications include an LTSM Plan to ensure that future land uses do not result in exposure in excess of the exposure scenarios evaluated. In addition, restrictions on land use have been placed on deeds to government owned property and will be placed on deeds to privately owned property. Appendix A, page 20 lists the OU II properties where supplemental standards have been applied. EPA and UDEQ concurrence on application of Supplemental Standards was received on July 1, 1999.

Remedial Action Design

A design document was prepared by using the information in a Radiological Assessment (Appendix A to the design) as well as the Site Assessment Report or the Site Characterization Report (SCR) for properties where hazardous substances other than radium-226 were suspected to be present for included properties. The designs were developed to demonstrate that compliance of ARARs would be achieved. The designs were submitted to EPA and UDEQ for review. Concurrence is provided by UDEQ. All Remedial Action Designs are completed.

Remedial Action Agreement

Each property owner accepted the Remedial Action Design by reviewing, negotiating, and subsequently approving the design by signing a Remedial Action Agreement (RAA). Prior to presenting the RAA with the attached design to the property owner, the DOE–GJO contracting officer reviewed and approved the RAA following regulatory approval of the Remedial Action Design.

Procurement and Construction

A bid package was prepared and an invitation for bid was issued on the basis of the approved Remedial Action Design and the RAA. A technical evaluation was conducted for each bid; a subcontract was awarded on the basis of cost and responsiveness; the Notice of Award was issued to the successful bidder; and a request for submittals was issued by DOE. All submittals were reviewed by DOE for technical responsiveness. The successful bidder was issued a Notice to Proceed following the technical review and acceptance of the submittals by DOE. Remediation of the property was conducted in accordance with the Remedial Action Design. Construction oversight was conducted by DOE's RAC and the DOE Site Engineer and OU II

Project Manager. The only work yet to be completed is associated with the restoration of MP–00845.

Verification and Measurement of Radon Daughter Concentrations

After removal of contamination, the excavation was verified using the 100-square-meter procedure or the large-area-verification procedure to demonstrate that remediation to applicable standards for contamination in soil was achieved. Track Etch cups were placed in all habitable structures following completion of remedial action to determine if internal radon concentration meets the applicable indoor standard established by EPA. Results of radon measurements, where applicable, are subsequently included in the property completion report.

A report entitled *Prompt Alpha-Track Study for Monticello, Utah, Vicinity and Peripheral Properties* (DOE 1995b) was submitted to EPA and UDEQ in March 1995. On the basis of the data presented in this report, EPA and UDEQ concurred on the use of a 3-month measurement in either the spring or fall as representative of a 1-year measurement. Implementation of the prompt measurements significantly reduced the amount of time required to determine the adequacy of remediation.

Completion Reports, Independent Verification, and Preparation of the RAR

The field verification map, excavation control and verification survey logs, Opposed Crystal System Spectral Gamma Analysis Data Forms, and radon daughter concentration (RDC) results are used to prepare a completion report for each property. The completion reports are submitted to the IVC for review. The IVC reviews completion reports, conducts field visits, collects soil samples from 10 percent of the completed properties, and recommends approval or disapproval of completion reports to DOE. DOE reviews the IVC's recommendation for approval of completion reports and prepares an RAR to certify that construction is completed on all the properties within the OU. See Section 4.5.1.6 for information on the preparation and approval of the RAR and the deletion process. DOE will propose deletion of non-groundwater related peripheral OU II properties (identified on page 5–12) from the NPL separately from the entire site.

4.2.2 Applicable or Relevant and Appropriate Requirements

The design documents demonstrate compliance with ARARs established in the ROD. Each ARAR is identified and specific design requirements or construction procedures that demonstrate compliance with the ARAR are identified.

In some instances, additional actions may be required during construction when differing site conditions are encountered or new information is obtained. Examples of actions that have been taken are described below:

- Swallows were noticed nesting on the BLM Compound during remedial action in 1995. DOE worked with the U.S. Fish and Wildlife Service and the State of Utah Division of Wildlife Resources to ensure that compliance with the Migratory Bird Act was attained. Demolition activities were rescheduled so that the nestlings could fledge before the nests were removed. No adverse impacts on the bird population occurred as a result.

- The Southwestern Willow Flycatcher was identified as an endangered species when the list of TES species was reviewed. Some areas scheduled for remediation contained willow stands that were suitable nesting sites for this species. As a result, remediation of willow stands greater than a specified area were rescheduled for remediation after August 15, 1996, when the nesting season was over. In the spring of 1997, willows were removed from the Millsite prior to the start of the nesting season so that construction could proceed as scheduled.

- Asbestos was discovered on the Millsite in the mill building area. An Asbestos Management Plan (DOE 1997a) was prepared addressing how the material would be managed for disposal in the on-site Repository. The Asbestos Management Plan (DOE 1997a) was submitted to UDEQ, Division of Air Quality for review and concurrence. Removal and disposal of asbestos was conducted in accordance with this plan.

4.2.3 Documents

OU II RD/RA Work Plan: This Work Plan was submitted to EPA and UDEQ on March 22, 1995. Additional scheduling details, beyond those presented in the December 1995 version of the SMP, were addressed in the Work Plan for design and construction. The schedules submitted in the Work Plan are now superseded by the schedules presented in this version (October 2000) of the SMP. Revision of the Work Plan is not proposed.

Site Assessment Reports (for nonradiological hazardous substances): These reports documented the first phase of property characterization for nonradiological hazardous substances. This phase of characterization consisted of visual inspection of the property, interviews with current and past property owners, and limited sample collection. The Site Assessment Report recommended no further action, preparation of a Sampling and Analysis Plan (SAP), if necessary, to determine appropriate remedial action, or remedial action if the area(s) of concern were limited in extent. Site Assessment Reports were submitted to EPA and UDEQ for review and were included in the remedial design for the property for approval.

Sampling and Analysis Plans (for nonradiological hazardous substances): The SAP established the plan for further site characterization. A screening phase was often proposed to take biased samples in "worst case" locations to determine if hazardous substances exceeding risk-based cleanup standards were present. A second phase established the extent of the contamination requiring remediation. The SAP included sampling rationale, locations, analytical requirements and methods, and QA/QC requirements.

Site Characterization Reports (SCR) (for nonradiological hazardous substances): The results of the characterization effort, as specified in the SAP, were summarized in the SCR. The SCR also provided recommendations for remediation or waste management requirements. SCRs were submitted to EPA and UDEQ for review and were included in the remedial design for the property for approval.

Human Health and Ecological Risk Assessments for Soil and Sediment Properties: The risk assessments documented the baseline risk to human health and the environment from the presence of the contaminated soil and sediment along Montezuma Creek.

Remedial Investigation Report for Soil and Sediment Properties: The RI documented the results of the characterization effort for contaminated soil and sediment and included the risk assessments in the final document.

Alternatives Analysis for Soil and Sediment Properties: The AA documented the evaluation of several potential removal actions for the cleanup of contaminated soil and sediment along Montezuma Creek.

Supplemental Standards Applications: The supplemental standards applications documented the cleanup standards used on the soil and sediment properties and the piñon/juniper properties south of the Millsite.

Action Memorandum for Soil and Sediment. The Action Memorandum documented the decision to implement a non-time-critical removal action for the soil and sediment properties.

Remedial Action Designs: Designs were submitted to EPA and UDEQ for review and concurrence on the scope of the remedial action.

Remedial Action Agreements: These were internal DOE documents establishing a contractual relationship between the property owner and DOE during remedial action.

Completion Reports: Completion Reports documented that each included property has been remediated and is in compliance with the applicable standards and guidelines. For radium-226, the standards are established in 40 CFR 192. Cleanup of other hazardous substances of concern is to risk-based standards. Alternative cleanup standards are documented in the supplemental standard applications.

Remedial Action Report: This report documents specific remedial action activities that occurred under each OU at a site. The report provides documentation that a particular OU has met its objectives and summarizes information for subsequent inclusion in the Superfund Site Close-Out Report. See Section 4.5.1.6 for additional information on the RAR and deletion of the site from the NPL.

4.2.4 Schedule and Funding

Remediation of the peripheral properties is complete and all contamination removed from the properties has been placed in the on-site Repository. The only remaining work to be conducted for OU II is restoration work on MP–00845, and preparation of completion reports, RARs, and a

Closeout Report for the non-groundwater related Peripheral Properties which will be deleted separately from the OU II groundwater-related Peripheral Properties. The OU II groundwater-related Peripheral Properties will be deleted with OU I.

Funding for OU II is included in the funding numbers shown for MRAP in Appendix C. Some of the final closeout documentation will be prepared by the LTSM Program.

4.3 Monticello Vicinity Properties Project

4.3.1 Tasks Descriptions

The same tasks described for OU II are applicable to the vicinity properties, with the following modification and additions:

Inclusion Surveys

This activity included performing land surveys, gamma scans, and measurement of RDCs to determine if a property had radium-226 contamination in excess of EPA cleanup standards. A radiological contamination map and an inclusion or exclusion recommendation was prepared. Inclusion surveys are completed.

Investigation and Remediation of Nonradiological Hazardous Substances

Investigations have been conducted to evaluate the presence of concentrations of hazardous substances other than radium-226 that may pose unacceptable risk and may require remediation or special handling as a hazardous waste. For the vicinity properties, these investigations were conducted on MS–00111, MS–00112, MS–00685, MS–00910, and MS–00959. MS–00688 was tracked and remedial action was designed with MS–00685 because of ownership and is therefore included in OU D.

Nonradiological substances released to the environment requiring remediation were identified on MS–00111, MS–00112, and MS–00959; remediation is complete on these properties. Although nonradiological hazardous substances were identified on MS–00685, EPA and UDEQ agreed (EPA 1996) to allow DOE to limit remediation to only commingled and radiological contamination. In part, the decision was made because of the ongoing operations on this privately owned property. Remediation of MS–00685 is complete.

Defining the Site Boundary

DOE submitted a proposal for defining the site boundary in March 1995. The proposal was based on EPA and UDEQ recommendations to continue examining properties within an 8-mi radius of the Millsite. DOE's efforts to locate additional mill related materials included:

- a mailing to all owners of property within the 8-mi radius,
- an announcement on radio station KUTA, Blanding, Utah,
- advertisements in local newspapers and notices in Salt Lake City newspapers,

- interviews with ore shippers and relatives, and
- talks with senior citizens and civic/community groups.

DOE notified property owners that inclusion surveys would be conducted at no cost to owners who believe their property may contain tailings or other materials from the Monticello Millsite. DOE also surveyed properties beyond the 8-mi radius when reliable evidence indicated that Monticello Millsite materials were present. Because it was in the public and DOE's best interest to identify properties with Monticello Millsite materials as quickly as possible, DOE gave the benefit of the doubt to information sources and performed inclusion surveys even when information was somewhat sketchy. The inclusion criteria were based solely on radiological contamination and not on the presence of nonradiological hazardous substances. The public was notified that the last day to request a survey was April 30, 1996. A total of 20 properties within the 8-mi boundary were surveyed and six (6) properties included in OU G of the MVP Site.

4.3.2 Applicable or Relevant and Appropriate Requirements

Designs demonstrate compliance with ARARs established in the ROD. Specific design requirements or construction procedures were established to achieve compliance with ARARs.

The primary ARAR establishing cleanup standards for remediation of the MVP Site is 40 CFR 192. Section 192.12 of this relevant and appropriate requirement establishes limits on gamma radiation levels and annual average RDC in habitable structures. It also establishes cleanup levels for radium in soil on open lands. Gamma levels shall not exceed the background level by more than 20 microroentgens per hour. RDC levels should not exceed 0.02 working level (WL) and shall not exceed 0.03 WL in any case. The residual radium-226 concentration in soil shall not exceed 5 pCi/g above background in the first 15 centimeters of soil or 15 pCi/g above background in any 15 centimeter soil layer below the top 15 centimeter averaged over 100 square meters.

Supplemental standards are also described in 40 CFR 192. Based on the eligibility requirements stated in 40 CFR 192.21, standards other than those established in 40 CFR 192.12 may be applied. DOE applied for supplemental standards based on the criteria of excessive environmental damage compared to cost. Approval of supplemental standards was received for City of Monticello streets and utilities, U.S. Highways 191 and 666 right-of-ways within the Monticello city limits, and DOE Property ID number MS–00176–VL. Supplemental standards were also applied to certain MMTS OU I and OU II properties.

4.3.3 Document Submittals

The following documents were prepared for work on the MVP Site. These documents are described in Section 4.2.3 except for the Inclusion/Exclusion letter, which is described below.

- Inclusion/Exclusion Letter
- Site Assessments
- Sampling and Analysis Plans
- Radiological and Engineering Assessment (same as Remedial Action Design)
- Supplemental Standards Applications

- Remedial Action Agreements
- Completion Reports
- Remedial Action Reports (one report per OU)

Additional requirements for deletion of the MVP Site from the NPL are described in Section 4.5.1.6.

Inclusion/Exclusion Letter: After reviewing information from inclusion surveys, DOE provides a recommendation to EPA and UDEQ to either include a property into the Site or exclude it as required by Section XIII of the FFA.

4.3.4 Schedule and Funding

DOE has completed all remedial actions, completion reports, Remedial Action Reports, and the preliminary and final Closeout Report. A Notice of Intent to Delete (NOID) for the MVP Site was published in the Federal Register on December 30, 1999. The direct and final rule deleting the MVP Site from the NPL became effective February 28, 2000.

4.4 Monticello Surface- and Ground-Water Remedial Action Project

The major activity of MSGRAP is the selection and implementation of an appropriate risk-based response action addressing groundwater and surface water contamination.

4.4.1 Task Descriptions

The following sections describe the tasks that will be performed to reach selection of an appropriate remedy. Figure 4–3, the OU III Logic Flow Diagram, shows the relationships of the tasks described below.

4.4.1.1 Field Characterization

Characterization of the nature and extent of contamination in groundwater and surface water is required to determine if the contamination presents an unacceptable risk to human health and the environment. An OU III RI/FS Work Plan (DOE 1995a) was prepared by DOE proposing the characterization activities required to determine the nature and extent of contamination. EPA and UDEQ concurrence on the RI Work Plan was not obtained; however, DOE proceeded with the characterization activities at risk. Characterization activities included assessing concentrations of contaminants of concern in surface water, groundwater, sediments, soils, and biota. Previous studies indicated a sixth medium, air, is not a significant pathway.

Because of the unknown effects of Millsite remediation on surface water and groundwater contamination, an IRA was proposed and the ROD for an IRA was signed by DOE, EPA, and UDEQ in September 1998. Additional characterization activities of surface water, groundwater, soil and sediment will be performed during the IRA (Section 4.4.1.9).

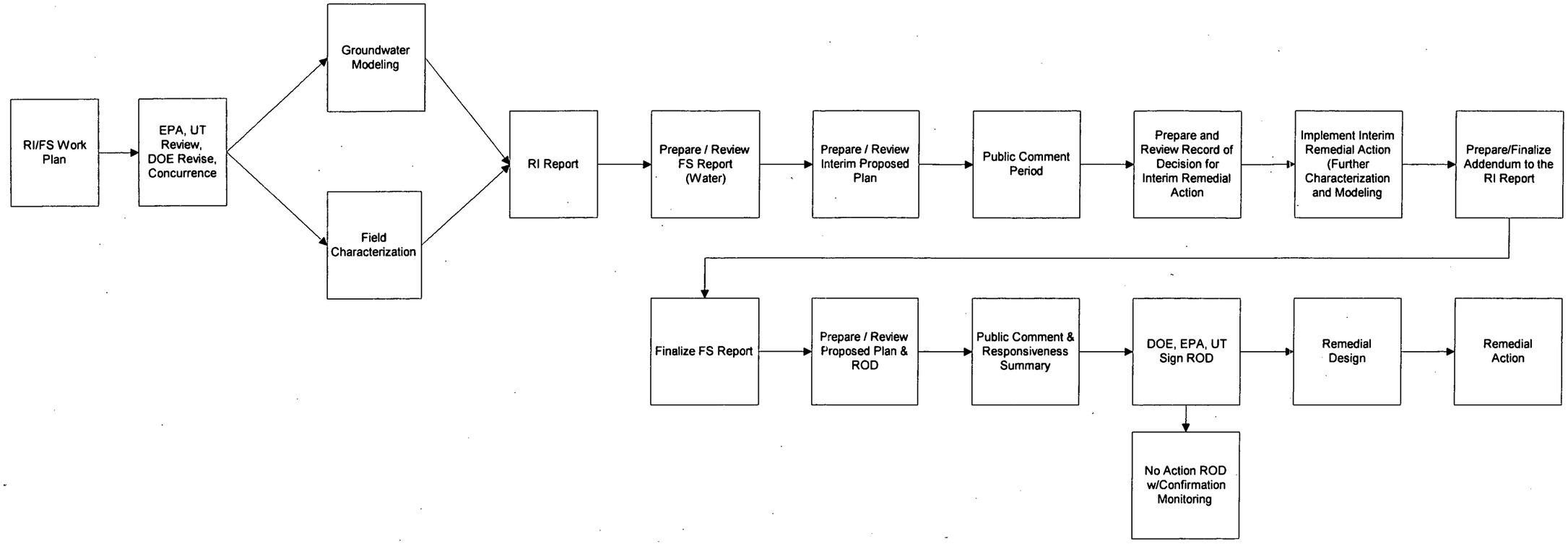

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Figure 4–3. OU III Logic Flow Diagram

4.4.1.2 Prepare Risk Assessments

A Human Health Risk Assessment and Ecological Risk Assessment were prepared to evaluate the risk to human health and the environment from contamination in groundwater, surface water, sediment, soil, and biota. The human health risk assessment is based on land-use scenarios concurred on by DOE, EPA, and UDEQ in various meetings. The risk assessments were first submitted as secondary documents and were then revised and submitted as part of the RI report (DOE 1998b).

The Human Health Risk Assessment and Ecological Risk Assessment will be updated near the conclusion of the IRA by comparing media concentrations and toxicity benchmarks used in the 1998 risk assessments with post-Millsite remediation media concentrations and changes in published toxicity benchmarks. EPA has agreed to provide DOE with the ecological toxicity benchmarks to be used in the comparison. The exposure scenarios developed for the risk assessments presented in the 1998 RI report will remain the same. The post-Millsite remediation risk assessments will be submitted as part of an addendum that will be prepared to the RI report which discusses post-Millsite remediation conditions in surface water and groundwater. (Section 4.4.1.3).

4.4.1.3 Prepare Remedial Investigation Report

The RI report (DOE 1998b) has been prepared to document the results of the pre-Millsite remediation characterization and risk assessments in accordance with established EPA guidelines. The 1998 RI report discusses the nature and extent of contamination, contaminant fate and transport, and incorporates the human health and ecological BLRA report. An ARAR evaluation is identified in an appendix to the RI report.

An addendum will be prepared to the 1998 RI report to document the results of characterization activities and groundwater modeling performed during the IRA; the addendum to the RI report will also include the BLRA updated to reflect post-Millsite remediation conditions.

4.4.1.4 Conduct Feasibility Study (pre- and post-Millsite Remediation) and Prepare Feasibility Study Report (pre-and post-Millsite Remediation) for Surface Water and Groundwater

During the pre-Millsite remediation FS, results of the RI (DOE 1998b) were used to develop remedial action objectives and remedial action alternatives, and to support initial screening and detailed analysis of the alternatives for surface water and groundwater in accordance with established EPA guidelines. Numerical modeling results were used, in part, to evaluate alternatives for active and passive restoration. The pre-Millsite remediation FS was not finalized because it was recognized by DOE, EPA, and UDEQ that Millsite remediation would have a profound and unpredictable impact on the surface water and groundwater systems.

The post-Millsite remediation FS will use the results of activities performed during the IRA to refine remedial action objectives and alternatives and to revise the detailed analysis of alternatives that were presented in the pre-Millsite remediation FS. The post-Millsite remediation FS will be conducted to ensure that appropriate remedial alternatives for surface water and groundwater are evaluated so that relevant information concerning the remedial action options

can be presented to the decision makers and an appropriate final remedy selected. Numerical modeling results will be used, in part, to evaluate the alternatives. Results of the post-Millsite remediation FS will be reported in a post-Millsite remediation FS report.

4.4.1.5 Prepare Interim Proposed Plan and ROD for an IRA

An interim Proposed Plan was prepared to obtain input from the public on the proposed IRA. The selected IRA was documented in the *Record of Decision for an Interim Remedial Action at the Monticello Mill Tailings Site, Operable Unit III – Surface Water and Groundwater, Monticello, Utah* (DOE 1998e).

4.4.1.6 Implement Interim Remedial Action

The IRA is being implemented to prevent exposure and control risks from groundwater, to prevent further degradation of water quality, and to achieve significant risk reduction quickly. The IRA Work Plan has been prepared to discuss the scope of activities to be undertaken during the IRA and is expected to be finalized in October 2000. Implementation of the IRA has begun and will continue for a minimum of 3 years after restoration of the Millsite is complete and until a long-term solution is finalized in the ROD. Installation of a PeRT wall downgradient of the Millsite was completed in July 1999. Analytical results from performance monitoring wells located upgradient, within, and downgradient of the wall will be evaluated in a report to be prepared approximately 2½ years after installation of the PeRT wall.

An IRA Status Report (DOE 1999c) was submitted in August 1999 to summarize progress made on completing the various IRA activities. This report will be updated annually and submitted as the IRA Progress Report.

4.4.1.7 Prepare Proposed Plan and ROD (Final Remedy)

Determination of a remedy for surface water and groundwater contamination will be based on the evaluation of alternatives done in the post-Millsite remediation FS. A Proposed Plan and ROD will be prepared and submitted to EPA and UDEQ. These will be made available for public review and comment. The Proposed Plan and ROD will establish performance goals for acceptable water quality and the time period within which these criteria must be met. Estimates on the time required for surface water and groundwater cleanup that are based on numerical modeling projections will be confirmed by field monitoring.

4.4.1.8 Prepare Remedial Design/Remedial Action Work Plan or Confirmation Monitoring Plan

If the selected remedy for OU III surface water and groundwater is an active technology, an RD/RA Work Plan for the design and remedial action for restoration will be prepared to document the process that will be followed and the schedule for implementation. The content of the RD/RA Work Plan will follow available EPA guidance.

If the selected remedy for OU III is no action with monitored natural attenuation, a surface-water and groundwater monitoring plan will be prepared that will detail the scope of the monitoring effort. The goal of monitoring is to provide the data necessary to demonstrate that the

remediation objectives are being met within a reasonable time frame and consistent with the predictive groundwater modeling performed during the IRA and documented in the addendum to the RI report.

4.4.1.9 Remedial Action Design

A remedial action design will be prepared if the selected remedy for restoration of groundwater and surface water is an active technology. DOE must prepare at least a conceptual and pre-final design, the content of these designs will follow the descriptions in Appendix B. As part of preparing the RD/RA Work Plan, DOE will provide a specific plan for implementing the design.

4.4.1.10 Procurement and Construction

This will be implemented similar to the process described in Section 4.2.1, if required. The RD/RA Work Plan will provide specific details for implementing construction.

4.4.1.11 Operation and Maintenance

If the selected remedy for OU III involves operation and maintenance of a WWTP developed for restoration of groundwater and surface water, a plan for operation and maintenance will be developed. Development of an Operation and Maintenance Manual may also be required. Once a remedy is selected, the DOE will address the requirements for operation and maintenance in the RD/RA Work Plan.

4.4.1.12 Interim Remedial Action Report

Assuming that a Long-Term Response Action (LTRA) has been implemented for restoration of groundwater and surface water, or verification monitoring, an interim RAR will be prepared (EPA 2000). See Section 4.5.1.6 for the content of an RAR and additional information on deletion of a site from the NPL.

4.4.2 Applicable or Relevant and Appropriate Requirements

The RI/FS Work Plan (DOE 1995a) presented a preliminary evaluation of ARARs for OU III. The ARARs analysis will be updated annually and presented as part of the IRA Progress Report beginning in 2000. The post-Millsite remediation FS will evaluate compliance of each alternative for surface water and groundwater with ARARs. The OU III ROD will establish the ARARs for OU III. The final ARARs for OU III will be established when the final remedy (ROD) is selected.

4.4.3 Documents

The draft final OU III RI/FS Work Plan, Field Sampling Plan, and Quality Assurance Project Plan (QAPjP) were submitted to EPA and UDEQ in September 1995. EPA and UDEQ concurrence was not received on these documents; however, in accepting the final RI report, dispute over the planning documents has ended. The following documents have been or will be prepared for OU III and were described in Section 4.4.1.

- *Human Health and Ecological Risk Assessments*. Secondary documents.
- *Remedial Investigation Report*. Primary document.
- *Addendum to the RI Report*. Primary document.
- *Feasibility Study Report* (post-Millsite remediation) for surface water and groundwater. Primary document.
- *Interim Proposed Plan* for surface water and groundwater. Primary document.
- *ROD for an Interim Remedial Action for Surface Water and Groundwater*. Primary document.
- *Interim Remedial Action Work Plan*. Primary document.
- *Interim Remedial Action Progress Reports*. Secondary documents.
- *Evaluation of PeRT Wall Treatability Study*. Secondary document.
- *Proposed Plan* for surface water and groundwater. Primary document.
- *ROD* for surface water and groundwater. Primary document.
- *RD/RA Work Plan* for surface water and groundwater. Primary Document.
- *Remedial Design* for surface water and groundwater. Primary Document.
- *Interim RAR* for OU III. Primary Document.

4.4.4 Schedule and Funding

The schedule for OU III has been developed so that a decision can be made on a preferred remedy as soon as reasonably achievable after Millsite remediation. As contamination was removed from the Millsite, the extent of residual soil contamination was characterized to understand its potential to be a continued source of groundwater contamination. Surface water and groundwater concentrations will be monitored a minimum of 3 years following restoration of the Millsite to verify that contaminant concentrations are obtaining acceptable levels.

The funding for completion of this project is shown in Appendix C.

FY 2001 funding is adequate for the scheduled activities. Funding has already been requested for FY 2002 which, if fully appropriated, will be adequate to fund the scheduled activities. DOE has developed budget requests for FY 2003 and the out years, which, if fully appropriated, will be adequate to fund the scheduled activities.

4.5 Monticello Projects Tasks

Several activities pertain to both MMTS and the MVP Site or several of the OUs. These activities are discussed below along with the documents that have been prepared in support of the activities.

4.5.1 Task Descriptions

4.5.1.1 Community Relations Program

The purpose of the community relations program for the combined MMTS and the MVP Site is to encourage public involvement in environmental restoration decision-making. The goal is to provide understandable, accurate, and timely information to interested parties during environmental cleanup activities. The program establishes a two-way communication between

DOE and stakeholders and maximizes opportunities for public involvement. To support this communication, DOE had a full-time Site Engineer assigned to Monticello and the RAC had a full-time community relations person and owner relations person. There were also several DOE and RAC support staff at the GJO that support community relations activities. In April 2000, DOE established a LTSM Representative who resides full-time in Monticello, Utah. The LTSM Representative, functioning as a point-of-contact, will continue to encourage open relations between DOE and the public.

As discussed in Section 1.1.3, the SSAB was initially established to support the AA for OU I. The SSAB continued to provide input to DOE on such issues as land-use options for the restored Millsite and preference for hiring local residents and providing training for those people. With the conclusion of remediation on the Millsite, the peripheral properties, and the vicinity properties, the SSAB disbanded following the October 20, 1999 meeting. SSAB members remain on the Key Contacts List and receive distributions of any fact sheets or press releases concerning the MMTS and MVP Site.

All community relations activities are conducted in accordance with the following Federal environmental laws and DOE and EPA guidance.

- 1990 NCP Section 300.415, Section 300.425, Section 300.430, Section 300.435, Section 300.815.
- CERCLA Sections 113; 117(a), (b), (c), (d), (e); 122 (d).
- U.S. Environmental Protection Agency, *Community Relations in Superfund: A Handbook*, January 1992 (EPA 1992).
- U.S. Department of Energy, *Public Participation in Environmental Restoration Activities Environmental Guidance*, November 1991 (DOE 1991).
- *Interim Report of the Federal Facilities Environmental Restoration Dialogue Committee, Recommendations for Improving the Federal Facilities Environmental Restoration and Decision-Making and Priority-Setting Processes*, February 1993 (EPA 1993b).
- U.S. Department of Energy, Policy DOE P 1210.1, Subject: Public Participation (DOE 1994).

The Community Relations Plan (CRP) (DOE 1996b) describes the activities that are being implemented to keep the community informed and involved in the project. Periodically, fact sheets are released describing current activities along with monthly news releases. Briefings are held for local officials and key business groups. Public meetings or public availability sessions are held on an as-required basis. Display advertisements are prepared to announce public meetings or applicable public comment periods on documents. A Utah Key Contacts List is maintained by GJO Public Affairs staff and is updated once every month and as information changes.

DOE and RAC staff participate in community activities such as the San Juan County Fair and Pioneer Days and support local educational programs by providing speakers for classroom presentations and community organizations. DOE has also established a toll free telephone number to connect Utah residents directly with DOE in Grand Junction, Colorado.

4.5.1.2 Health and Safety Program

Occupational safety is a paramount concern for activities on the Monticello Projects. Health and Safety staff prepare Health and Safety Plans (HASPs), Radiation Work Permits, and Safe Work Permits. Requirements for training, medical monitoring, site access, and personnel protective equipment are established by Health and Safety staff. Activity-specific requirements are determined based on a safety and health hazard analysis. Section 7.0, Worker Health and Safety Protection, describes the function of this program in more detail.

4.5.1.3 Special Waste Management

During the remediation of the Millsite and properties, hazardous substances other than byproduct material required remediation (see task description for Investigation and Remediation of Hazardous Substances Other Than Radium-226 under Section 4.2.1). The IWMA was designated to store hazardous wastes, mixed wastes (RCRA hazardous wastes that are also radioactive), wastes regulated by the Toxic Substances Control Act, and wastes that pose an acute health and safety hazard. With the exception of polychlorinated biphenyl (PCB) waste, wastes stored at the IWMA were containerized and ultimately placed in the repository. PCB waste stored at the IWMA was determined to be non-radioactive and was shipped offsite to a licensed treatment, storage, and disposal facility. The IWMA was operated in compliance with the requirements for a RCRA storage facility and was closed in accordance with the requirements of the Special Waste Management Plan (DOE 1997c).

Other wastes were also encountered that did not need to be stored at the IWMA but required special handling as a best management practice. These wastes presented low hazards, typically soils contaminated with waste oils. These wastes were placed in the BMPA where containerization was not required. These wastes were placed on plastic in a bermed area and covered with plastic, as necessary, to prevent releases to the environment. The BMPA has been removed and materials stored there placed in the Repository.

4.5.1.4 Supplemental Standards Activities

Application of supplemental standards has been approved for properties containing vegetation that cannot be readily restored if destroyed or damaged, particularly piñon/juniper woodlands and wetlands along Montezuma Creek. In addition, supplemental standards have been applied to city streets and utilities in the City of Monticello, and the U.S. Highway 191 embankment and along U.S. Highway 666 because the cost of excavation is excessive compared to the benefits of remediation. The EPA and UDEQ approved supplemental standards on several OU II properties and properties in the MVP Site. As part of the requirements for implementation of supplemental standards, DOE has entered into binding agreements with the City of Monticello and UDOT for long-term management of contamination. In addition, DOE has implemented LTSM activities at the sites to ensure that the use of the land remains limited and off-site migration of contamination is detected and managed as appropriate. DOE will be working with the City of Monticello to

ensure that utility excavations are monitored and, as appropriate, contamination moved to the TSF at the Repository access area for final disposal at the Grand Junction, Colorado disposal cell.

4.5.1.5 Wetlands Protection and Restoration

Although impacts to wetland areas were minimized as much as possible, CERCLA cleanup activities did affect some wetland areas. DOE ensured that (1) CERCLA cleanup activities complied with wetlands regulations and guidance; (2) adverse effects to wetland areas were avoided where possible; (3) adverse effects to wetland areas were minimized; and (4) unavoidable adverse effects to wetland areas have been or will be mitigated.

Wetland areas at the MMTS and MVP Site totaled 38 acres. Divided into wetland types, these areas included (1) perennial streams (functions typically include flood-flow alteration and medium wildlife and aquatic diversity); (2) intermittent streams (functions typically include flood-flow alteration, groundwater recharge, and low wildlife diversity); (3) emergent wetlands (functions typically include groundwater discharge and recharge, and low wildlife diversity); and (4) depressions (functions typically include groundwater recharge, sediment retention, and low wildlife diversity).

Of the 38 acres of wetland on the MMTS and the MVP Site, only 11.7 acres were remediated or affected by remedial activities. Affected wetland areas included perennial streams (5.7 acres), intermittent streams (1.0 acre), emergent wetlands (0.70 acres), and depressions (4.3 acres). Wetland areas have been or will be restored in situ where possible; otherwise, they will be re-created at the OU I Millsite. Mitigation has focused on the restoration of wetland functions and the areal extent of wetland type, the minimization of erosion, and the prevention of noxious and non-noxious weed encroachment. As much as possible, revegetation efforts have emphasized the use of ecotype seed.

Monitoring at each restored wetland area was or will be initiated at the end of the growing season following restoration to allow mitigation success to be evaluated. Monitoring continues for 3 years or until the success criteria are met. Success criteria include restoration of 80 percent of the baseline canopy cover, 80 percent of the baseline shrub and tree density, and a combined frequency of obligate, facultative, and facultative wetland plants in proportions similar to those of the baseline. After the third year of monitoring, wetland delineations are conducted to verify restored acreage. Annual monitoring reports are submitted to EPA at the end of each calendar year.

4.5.1.6 Deletion of the Sites from the National Priorities List

Upon completion of remedial action at the MMTS and MVP Site, DOE will prepare a Property Completion Report for each property. Remedial action has been completed and all completion reports have been prepared for the MVP Site. The information in the Property Completion Reports along with other required information will be compiled into a RAR for each OU within each site. The RAR will reference the Property Completion Reports, and various sampling protocols under which the work was performed. The Property Completion Reports and RARs are available in the Administrative Record and the DOE–GJO project file archives. All RARs have been completed for the MVP Site.

The purpose of the RARs is to demonstrate that remedial action for each OU is complete in accordance with CERCLA. A punch list of outstanding items can be included, in the appendix of the RAR for each OU, to document action items to be completed prior to the approval of the Close-Out Report (COR). For OU II, properties not associated with groundwater concerns will be addressed by a RAR. Then a Preliminary Close-Out Report (PCOR) and COR will be prepared to partially delete OU II from the NPL. After completion of restoration of the Millsite, a RAR will be prepared for OU I and the OU II groundwater related properties. Subsequently, a PCOR and COR will be prepared to delete OU I and the rest of OU II from the NPL. Section 5 lists the OU II groundwater and non-groundwater related properties.

For OU III of the MMTS, an interim RAR will be prepared because the selected remedy for OU III will likely be a LTRA. For LTRAs, an interim RAR is prepared when the physical construction of the selected remedy is completed and the unit is operating as designed.

A PCOR will be prepared to document that all physical construction at the site has been completed. The PCOR contains a schedule for activities that must be completed prior to issuing a COR. The COR documents compliance with statutory requirements and provides overall technical justification for site completion. EPA, after consultation with UDEQ, will determine whether appropriate response actions have been implemented and whether any potential threat to public health or the environment remains. This determination may be indicated by documenting by memorandum that enforcement inspection has been performed and that EPA and UDEQ concur that the remedial action complies with construction specifications. If EPA determines, after consultation with UDEQ, that no further response is appropriate, EPA will initiate action to delete the OUs (or portions of an OU in the case of the peripheral properties) from the NPL, consistent with CERCLA, as amended, the NCP, and applicable EPA policy and guidance.

The COR is reviewed and comments provided by EPA Headquarters, UDEQ, and EPA Region VIII. DOE will incorporate these comments and the COR will be submitted to the EPA Regional Administrator for approval. Approval of the COR by the Regional Administrator signifies the superfund NPL Site completion and that the site has entered the operation and maintenance phase. All punch list items must be complete at this time. Concurrent with the Regional Administrator's review, DOE will prepare and publish a NOID in the Federal Register and will compile deletion docket material. The NOID will be available for public review, and a responsiveness summary must be prepared addressing any comments received. Upon assembling all documentation in the Certification Docket, and receiving approval from the Regional Administrator, a Notice of Deletion will be published in the Federal Register.

A Proposed Rule and a Direct Final Rule for the MVP Site was published in Federal Register on December 30, 1999. EPA did not receive significant adverse or critical comments and the Direct Final Ruling deleting the MVP Site from the NPL became effective on February 28, 2000.

If, at any step, EPA determines, after consultation with UDEQ, that the documentation is not sufficient to warrant deletion from the NPL, EPA shall notify DOE in writing and provide specific reasons for the determination. DOE shall take appropriate actions to correct any deficiencies noted and shall resubmit the documentation to EPA.

4.5.1.7 Five-Year Reviews

The NCP acknowledges that CERCLA cleanups may leave some contamination in place. Such instances must be part of a selected remedy by using CERCLA evaluation criteria (40 CFR 300.430[e-f]). However, EPA must review the protectiveness of that remedy at least every 5 years after remedial action begins (40 CFR 300.430 [(f)(4)(ii)]) (EPA 1991). Five-year reviews do not end with deletion of a site from the NPL but continue until contaminant levels allow unlimited use and unrestricted exposure at that site (55 FR 8699 1990). DOE will prepare the CERCLA 5-year review that will be submitted to EPA and UDEQ for evaluation. If, at a later date, the regulators determine that the completed remedial action is no longer protective of human health or the environment under CERCLA, DOE is responsible for developing and implementing a Contingency Plan for remediating the contamination or otherwise controlling the risk that it poses. Furthermore, DOE is responsible for documenting its activities under the Contingency Plan and reporting them to EPA, UDEQ, affected local governments, and the public.

Except for the Repository and areas where supplemental standards are applied, contamination exceeding risk-based cleanup levels or radium-226 in excess of cleanup standards in 40 CFR 192 will not remain on the Millsite, peripheral properties, or vicinity properties. Five-year reviews will need to be conducted at the on-site Repository and any areas where supplemental standards are applied. The first 5-Year Reviews were issued February 13, 1997. The next 5-Year Review will be completed in June 2002.

4.5.2 Documents

- Community Relations Plan (DOE 1996b): The CRP for the MMTS has been updated each year since the SMP was first completed in March 1995. The CRP is intended to be a "living" document that will be updated to reflect major new issues, activities, and milestones during the course of all work to be performed at Monticello. DOE has committed to updating this plan the first quarter of each FY. The 2000-2001 issue of the CRP is a transitional document and is the last issue in that format. Henceforth, information will primarily be disseminated to stakeholders through the issuance of fact sheets and community relations updates in the form of news releases.

- Monticello Projects Health and Safety Plan (DOE 1997b): A comprehensive HASP was submitted to EPA and UDEQ in April 1995 and updated versions in 1997 and 1998. The content of this plan is discussed in Section 7.0 of the SMP. Task Specific HASPs are appended to the HASP as additional detail is added to the HASP for new activities.

- Special Waste Management Plan (DOE 1997c): The Special Waste Management Plan presents the procedures for identification, characterization, and management of concentrations of suspect nonradiological hazardous substances that may be encountered on the Millsite and on vicinity and peripheral properties. This plan is a guide for field use and regulatory determinations that must be made prior to and during construction. The Plan was initially submitted to EPA and UDEQ for review and concurrence in March 1995. Comments on the Plan were received from EPA and UDEQ and a revised version was submitted May 1996 with a final version submitted April 1997. The plan also contains procedures for

operation of the IWMA. All activities associated with the Special Waste Management Plan have been completed.

- *Monticello Wetlands Master Plan* (DOE 1996c): The Wetlands Master Plan establishes the overall plan for protecting MMTS and MVP Site wetland areas during the remedial process. Provided in the Wetlands Master Plan are mitigation plans for disturbed wetland areas at OU II, the MVP Site, and OU III, which have all been implemented. An addendum to the Wetlands Master Plan was prepared to address restoration requirements for OU I. This addendum was submitted with the Pre-Final design for Millsite Restoration.

5.0 Project Schedules and Milestones

5.1 Establishing Project Schedules and Milestones

The SMP establishes the overall plan for remedial actions at the MMTS and the MVP Site and milestones against which progress can be measured. The SMP was first prepared in 1995 and was revised in July 1998. In June 2000, Section 5.0, "Project Schedules and Milestones," was updated to reflect revised schedules agreed to by EPA, UDEQ, and DOE. The stipulated penalty milestones listed in this section are the enforceable milestones unless superseded by revised schedules agreed to by EPA, UDEQ, and DOE, or by amendments to the FFA.

5.1.1 Requirements of the Federal Facilities Agreement

Section XXX of the FFA states that "... [a]ll terms and conditions of this Agreement which relate to interim or final remedial actions, including corresponding timetables, deadlines, or schedules ... shall be enforceable." The FFA required DOE to submit a Work Plan establishing how DOE would complete the tasks required by the FFA and specific timetables and schedule for completion of remedial action. The FFA Work Plan was completed May 1989 and established the enforceable timetable for completion of primary documents identified in the FFA and completion of remedial action.

The scope of work, timetables, and schedule for remedial action presented in the FFA Work Plan were superseded by the RDWP (DOE 1992b). The RDWP was identified as a primary document and was submitted as a final document in January 1992. The RDWP established a revised timetable with specific stipulated penalty milestones. The stipulated penalty milestones were associated with submittal of primary design documents that would be generated as part of the remedial design and notice of award to subcontractors for remedial action work.

The SMP has been identified as a primary document. DOE, EPA, and UDEQ concurrence on the SMP is the basis for establishing new enforceable milestones and nonenforceable target dates for all activities extending through completion of the Monticello Projects. The timetable in the RDWP is superseded by the timetables established in this SMP.

5.1.2 Enforceable Milestones and Nonenforceable Target Dates

Enforceable milestones and nonenforceable target dates for the Monticello Projects are described in Tables 5–1 through 5–6. Enforceable milestones are identified for those activities in the current FY (2001) and the two subsequent FYs (2002 and 2003) for which stipulated penalties may be assessed against DOE. Nonenforceable target dates are identified for those activities in subsequent out-years (FY 2004 and beyond) for which no stipulated penalties may be assessed against DOE. Target dates have also been established in the current and subsequent years for major activities that must be completed as interim, nonstipulatable milestones.

In view of recent budget cuts and future budget uncertainties, DOE faces a significant challenge in maintaining an environmental program that meets the rigorous schedule of DOE's compliance agreements, including FFAs, in a manner that maximizes use of the Department's resources. A key element in meeting this challenge is to develop an approach to setting milestones in FFAs

that provides accountability, focuses resources on high priority activities, and recognizes fiscal and technical realities.

To meet these objectives, DOE has proposed and EPA and UDEQ have concurred on the 3-year (FY + 2) rolling milestone approach for establishing a schedule for completion of remedial action activities at the Monticello NPL Sites. Under this approach, schedule dates are designated as either "milestones" or "target dates." Milestones and target dates are established in consideration of the site's environmental budget allocation. Milestones are enforceable deadlines established for near-term (FY + 2) activities for which greater fiscal and technical certainty exists. Target dates are nonenforceable deadlines for longer-term activities (greater than FY + 2) and would be converted to milestones on an annual basis. Target dates may also be established in the FY +2 time frame and beyond for completion of activities leading to stipulated penalty milestones. Each year, after receipt of the Approved Funding Program that reflects the final Congressional appropriation for the current FY, existing milestones would be reviewed and adjusted if necessary. An additional year of milestones (the FY + 2 year) would also be established, adjusting the previous target dates if necessary.

Under DOE's proposed approach, DOE, EPA, and UDEQ would consider a variety of factors during the annual review and establishment of milestones and target dates. These include funding availability, latest information on cost estimates, site priorities identified through consultations between DOE, EPA, UDEQ, and stakeholders, new or emerging technologies, and other relevant factors. Renegotiations of milestones would occur in the event of insufficient Congressional appropriations. Out-year nonenforceable target dates would be established using realistic assumptions. DOE, EPA, and UDEQ would recognize the uncertainties associated with the long-term target dates that lay out DOE's strategic vision of how it ultimately plans to accomplish the project. Furthermore, DOE would provide the regulatory agencies and other stakeholders with an opportunity to have a meaningful voice in formulating the site budget and developing priorities at the site.

EPA and UDEQ agree to meet with DOE on an annual basis to renegotiate the milestone and target dates established in the SMP. However, the enforceable milestones described in Tables 5–1 through 5–6 for those activities in the current FY (2001) and the two subsequent FYs (2002 and 2003) may only be modified as part of this renegotiation or through the already existing procedures of the FFA. Further, EPA and UDEQ reserve the right to initiate any action deemed necessary to enforce these milestones. DOE, EPA, and UDEQ agree to abide by the existing procedure for resolution of disputes (Section XIV Resolution of Disputes, Monticello FFA [DOE 1988b]) and will make all reasonable efforts to informally resolve any disputes involving insufficient funding before invoking formal dispute Procedures.

5.2 Project Milestones

Table 5–1 is a summary of the enforceable milestones through and including FY 2003. Table 5–2 lists all of the Monticello Projects documents that have been completed since the March 1995 version of the SMP or will be submitted to EPA and UDEQ for review and concurrence. The submittal dates in Table 5–2 are usually based on the late start and late finish dates for completion of tasks; therefore, document submittals may occur sooner. The submittal date for a document is defined as the date the document is received by EPA and UDEQ. As work on the

projects progresses, additional documents may be submitted. Additional documents will be identified in the FFA monthly as soon as it is determined that they are required. Issues critical to the completion of remedial action on the Monticello projects are discussed below.

Monticello Mill Tailings Site Operable Unit I—Millsite Remediation and Restoration

The only assumption critical to project completion and meeting the milestones is that the City of Monticello will meet the penalty milestones in this SMP as required by the Cooperative Agreement between DOE and the City.

Monticello Mill Tailings Site Operable Unit II—Peripheral Property

Other than restoration of MP–00845, the remaining work on OU II is associated with preparation of completion reports, RARs, and closeout documentation. The only assumption critical to meeting the OU II milestones is that data required to complete these reports is complete and accurate and any comments received from the IVC, EPA, and UDEQ can be readily responded to.

Monticello Mill Tailings Site Operable Unit III—Surface Water and Groundwater

The major activities required for reaching decisions regarding selection of a preferred remedy for surface-water and groundwater contamination are associated with continued implementation of the IRA and preparation of an addendum to the RI and a post-Millsite remediation FS. The only assumption critical to making the established milestones is that EPA and UDEQ have agreed to primary document review durations that are less than those indicated in the FFA. Should EPA/UDEQ not meet the scheduled review times, DOE will be granted a day-for-day milestone extension relative to the assessment of stipulated penalties.

Monticello Vicinity Properties Site Operable Units A, B, C, D, E, F, G, and H

Deletion of the site continued on schedule. No adverse public comments were received in response to the NOID. The direct and final rule to delete the MVP site became effective February 28, 2000.

5.3 Enforceable Milestones and Nonenforceable Target Dates

Enforceable milestones and nonenforceable target dates have been established for submittal of primary documents to EPA and UDEQ, concurrence on property design documents, construction complete for OU II properties, construction complete for vicinity properties, and for submittal of Draft Final Remedial Action Reports. The milestones and target dates for each OU for each project are summarized in Table 5–1 for FYs 2001, 2002, and 2003, and detailed listings are provided in Tables 5–3 to 5–6. Should there be inconsistencies in the tables or texts, stipulated penalty milestone dates are identified in Table 5–1. A time line showing major decision points and document submittal dates for OU II is shown in Table 5–2.

Table 5–1. Penalty Milestones in Fiscal Years 2000, 2001, and 2002

Monticello Mill Tailings Site	
OU I	**MILESTONE**
Millsite Remediation	
Repository Construction Complete	September 30, 2000 (complete May 19, 2000)
Millsite Restoration	
Submit Pre-Final Design to EPA/Utah - Primary Document	November 30, 1999[a] (complete July 18, 2000)
Notice of Award	May 31, 2000[a] (complete August 28, 2000)
Complete Millsite Restoration	July 17, 2001 (except seeding)
Repository Area Restoration	
Repository Area Pre-Final Design	March 31, 2001
Construction Complete (except seeding)	July 17, 2001 [b]
OU I Property Completion Reports	
Millsite and Groundwater-Related Peripheral Properties	October 31, 2001
OU II	
Complete Remedial Action (including restoration) for Montezuma Creek Properties	September 30, 1999 (complete April 12, 1999)
OU II Draft-Final Remedial Action Report for Non-Groundwater Peripheral Properties	October 30, 2000 (complete September 28, 2000
OU III	
Surface Water/Groundwater IRA	
Draft-Final PeRT Wall Treatability Study	September 30, 2002
Final IRA Work Plan	October 30, 2000
General	
CERCLA Five Year Review MVP and MMTS	June 2002

[a]Date missed. Schedule revised to reflect Cooperative Agreement with the City of Monticello. No enforcement action taken by EPA/UDEQ. Revised date shown in parenthesis.
[b]Includes haul road restoration, haul road wetlands, abandonment of well AEC-6.

Table 5–2. List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Monticello Mill Tailings Site			
Operable Unit I			
Wastewater Treatment Plant			WWTP Testing Plan February 1995 - (Complete)
Millsite Remediation	Design and Specification Package for Millsite Remediation **Pre-Final, April 28, 1995 - (Complete)** Final, July 12, 1995, (Complete) Final Concurrence, (Complete)	OU I Millsite Remediation Intermediate Design January 27, 1995 - (Complete)	Repository Access Area Design April 1995 - (Complete)
			Subcontractor Final Haul Road Design December 1995 - (Complete May, 1996)
			Subcontractor Final Decontamination Pad Design submittals Draft submitted for comments June 1996. Comments incorporated and revision sent July 1997.
			Threatened, Endangered and Sensitive Species Survey results July 1995 - (Complete)
			Archaeological Mitigation Plan May 1995 - (Complete) Results of Archaeological Mitigation Effort September 1995 - (Complete June, 1996)
			Millsite Completion Report Draft, June 30, 2000 - 60 day review Draft-Final, October 4, 2000 - 60 day review
Millsite Restoration		Millsite Restoration Conceptual Design[1] December 31, 1996 - (Complete)	
		Millsite Restoration Intermediate Design May 1, 1999[1] - (Complete)	
	Millsite Restoration Design **Pre-Final, November 30, 1999[2] - 15 day review (Revised to June 23, 2000)** Final, December 31,1999 (Revised to July 11, 2000)		

Table 5–2 (continued). List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit I (continued)			
General to OU I	Repository Area Site Restoration Pre-Final Design, March 31, 2001		
	RD/RA Work Plan Draft, April 27, 1995 - (Complete) **Draft Final, August 25, 1995 - (Complete)** Final Concurrence, September 24, 1995 (Complete)		
	Explanation of Significant Difference and Notice Draft, March 22, 1995 - (Complete) **Draft-Final, April 14, 1995 - (Complete)** **Public Notice of Availability, (Complete)**		
Millsite and OUII Groundwater-Related Properties			
	Remedial Action Report Millsite and Groundwater Peripheral Properties (3) Draft, October 1, 2001 **Draft-Final, January 2, 2002**		Final Completion Report Millsite and Groundwater[3] Peripheral Properties (3) Draft, July 31, 2001 - 60 day review Draft-Final, October 30, 2001 - 30 day review
Operable Unit II			
	Remedial Action Designs (future completions only), Supplemental Standards Properties MP–00391 III, MP–01077, and MP–01041, February 16, 1999 - (Complete)		Site Assessment Reports March 1995 (Complete)
	RD/RA Work Plan Draft, March 22, 1995 - (Complete) **Draft Final, July 20, 1995 - (Complete)** Final Concurrence, (Complete)		Final Completion Report Non-Groundwater[4] Peripheral Properties (21) Draft, June 29, 2000 - 60 day review Draft-Final, October 31, 2000 - 30 day review
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances - MP–00181 Phase IV Draft, May 5, 1995 - (Complete) **Draft Final, August 3, 1995 - (Complete)** Final Concurrence, (Complete)		
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances - MP–00990 Draft, July 7, 1995 - (Complete) **Draft Final, November 4, 1995 - (Complete February 28, 1996)**		
	Alternatives Analysis for Soil and Sediment Draft, June 26, 1997 – Complete **Draft-Final, February 2, 1998 –** Complete Final Concurrence, September 30, 1998		

Table 5–2 (continued). List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit II (continued)			
	Remedial Action Design for Soil and Sediment **Draft-Final, March 23, 1998** - (Complete) Final Concurrence - May 19, 1998 - (Complete)		
	Action Memorandum for Soil and Sediment Draft, December 16, 1997 - (Complete) **Draft-Final, May 5, 1998 - (Complete)** Final distribution, June 30, 1998 - (Complete)		
	Supplemental Standards Applications for Soil and Sediment Draft, September 30, 1998 - (Complete) Draft-Final, January 20, 1999 - (Complete) Final Concurrence, July 1, 1999 - (Complete)		
	Remedial Action Report (Non-Groundwater-Related Peripheral Properties) (4) Draft, July 28, 2000 - (Complete) **Draft-Final, October 30, 2000 - (Complete)**		
Operable Unit III			
	RI/FS Work Plan Draft-Final, September, 1995 – Complete Final Concurrence, November 27, 1998 (due to final concurrence on RI)		
	Remedial Investigation Report Draft, June 27, 1997 – Complete **Draft-Final, February 2, 1998 - (Complete)** Final Concurrence, November 27, 1998 - (Complete)	Human Health Risk Assessment Draft, March 18, 1997 - (Complete) Ecological Risk Assessment Draft, June 6, 1997 - (Complete)	
	Feasibility Study Report for Surface and Groundwater Draft (pre-IRA), September 2, 1997 – Complete Revised Draft (pre-IRA), March 30, 1998 - Complete		
	Interim Proposed Plan Draft, February 11, 1998 – Complete Draft-Final, March 16, 1998 – Complete Final Concurrence, March 26, 1998 - Complete		
	Interim ROD Draft, May 21, 1998 – Complete Draft-Final, August 17, 1998 – Complete Final, August 25, 1998DOE signed August 25, 1998 Final Concurrence (ROD signed), September 29, 1998 - (Complete)		

Table 5–2 (continued). List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Operable Unit III			
	Interim Remedial Action Work Plan Draft, October 30, 1999 - (Complete) Draft-Final, October 30, 2000 - (Complete)	Interim Remedial Action Progress Reports, September 30, 2000, (and annually thereafter on August 31)	
	Remedial Investigation Addendum Draft, February 11, 2004 - 30 day review **Draft-Final, April 9, 2004 - 30 day review** Final Concurrence, May 12, 2004		
	Draft (post-IRA), Feasibility Study May 19, 2004 – 41 day review **Draft-Final (post-IRA), August 18, 2004 - 41 day review** Final Concurrence, September 29, 2004	Evaluation of PeRT Wall Treatability Study **Draft-Final, September 30, 2002 - 60 day review**	
	Proposed Plan for Surface and Groundwater, Draft, September 23, 2004 - 39 day review **Draft-Final, December 10, 2004 - 30 day review** Final Concurrence, January 15, 2005		
	ROD for Groundwater and Surface Water Draft, January 17, 2005 - 36 day review **Draft-Final, April 1, 2005 - 30 day review** Final Concurrence, (ROD signed) July 17, 2005		
	RD/RA Work Plan for Water Remediation **Draft-Final, September 17, 2005 - 60 day review**		
	Design for Water Remediation **Pre-Final, June 15, 2006 - 60 day review**		
	Remedial Action Report **Draft-Final, January 15, 2008** Remedial Action Start, October 15, 2006		
Monticello Vicinity Properties Site			
	Radiological and Engineering Assessments (future completions only) **OU F, Engineering Complete** July 7, 1997 (Complete) **OU G, Engineering Complete** September 4, 1997 (Complete) **OU H, Engineering Complete** October 31, 1998 (Complete) 60 day review		Last Draft-Final Completion Report submitted OU A July 7, 1997 (Complete) OU B December 11, 1997 (Complete) OU C June 27, 1997 (Complete) OU D December 31, 1997 (Complete) OU E January 16, 1998 (Complete) OU F March 12, 1999 (Complete) OU G January 30, 1999 (Complete) OU H April 29, 1999 (Complete)60 day review

Table 5–2 (continued). List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
Monticello Vicinity Properties Site			
	Sampling and Analysis Plan for Non-Radiological Suspect Hazardous Substances at MS–00685/MS–00687 Draft, October 30, 1995 - (Complete) **Draft-Final, February 27, 1996 - (Complete)**		Site Assessment Reports March 1995 - (Complete)
	Remedial Action Reports - Draft Final **OU A - November 8, 1996 (Complete)** **OU B - December 24, 1997 (Complete)** **OU C - October 15, 1997 (Complete)** **OU D - March 18, 1998 (Complete)** **OU E - March 18, 1998 (Complete)** **OU F - December 24, 1997 (Complete)** **OU G - September 12, 1998 (Complete)** **OU H - April 29, 1999 (Complete)**		Site Boundary Proposal Draft, March 31, 1995 - (Complete) Draft-Final, May 1, 1995 - (Complete) Final, (Complete)
	Preliminary Close-out Report, April 29, 1999 (Complete) Final Concurrence on Close-out Report September 2, 1999 (Complete)	Publish Direct Final Rule in the Federal Register, December 30, 1999 (Complete) Site Deletion Effective February 28, 2000	
General to Both Sites			
	Special Waste Management Plan March 7, 1995 - (Complete)Revision transmitted April 3,1997		Health and Safety Plan April 1995 - (Complete), in revision
	Monticello Site Management Plan **Final, March 15, 1995 (Complete)** Revision 1 in progress (Complete) Revision 2 in progress		Prompt Alpha-Track Study for Monticello, Utah, Vicinity and Peripheral Properties March 1995 -(Complete)
	Community Relations Plan (revised) **Draft, March 22, 1995 - (Complete)** Draft-Final, (Complete) Final Concurrence, (November, 1995) Annual updates are prepared each year.		Long-Term Surveillance and Maintenance Plans as included with supplemental standards applications.
	Supplemental Standards Documents **Draft, March 31, 1995 - (Complete)** Revised Draft November 4, 1996 (Complete) Reviewed December 23, 1996 (Complete) Final Documents Accepted July 1, 1999 (Complete)		Air Monitoring Work Plan - resubmitted September 1997
	Wetlands Master Plan Draft-Final , November 30, 1995 (Complete)		

Table 5–2 (continued). List of Monticello Projects Documents, Submittal Dates, and Proposed Review Duration

Site/Operable Unit/Task	Primary Documents	Secondary Documents	Other Documents
General to Both Sites			
	LTSM Administrative Plan Draft, June 13, 2000–(complete) review concurrent with Vol I LTSM Procedures Vol II (Supplemental Standards)Draft-Final, May 31, 2000 - (complete) 30 day review LTSM Procedures Vol I (Repository and Millsite) Draft, August 15, 2000 - 60 day review LTSM Administrative Plan Draft-Final, February 26, 2001 LTSM Procedures Vol. I Draft-Final, February 26, 2001 LTSM Procedures Vol. II Draft-Final, February 26, 2001 LTSM Procedures Vol III (OU III)Draft - TBD		Supplemental Standards ESDs and Fact sheets Drafts, January 21, 1999 Public Notice Published, February 19 - March 4, 1999 Public Meeting, March 18, 1999 Public Comment Period, March 5 - April 5, 1999 Draft-Final with Comment Responses, April 19, 1999 (Complete)

Notes:
Stipulated Penalty Milestones deliverables are indicated in boldface type. All durations are shown in calendar days. The date for final concurrence assumes that dispute resolution is not invoked. TBD - To Be Determined

[1]Restoration design was turned over to the City of Monticello in a Cooperative Agreement.
[2]Date missed. Schedule revised to reflect Cooperative Agreement with the City of Monticello. No enforcement action taken by EPA/UDEQ. Revised date shown in parenthesis.
[3]Millsite and Groundwater-Related Peripheral Properties are: Millsite, MP–00179, MP–00181, MP–00391, MP–00951, MP–00990, MP–01077, MP–01084, MG–01026, MG–01027, MG–01029, MG–01030, and MG–01033
[4]Non-Groundwater-Related Peripheral Properties are:MP–00105, MP–00178, MP–00180, MP–00198, MP–00211, MP–00845, MP–00886, MP–00887, MP–00888, MP–00947, MP–00948, MP–00949, MP–00950, MP–00963, MP–00964, MP–00988, MP–01040, MP–01041, MP–01042, MP–01083, and MP–01102

Table 5–3. Monticello Mill Tailings Site OU II Peripheral Property Milestones and Target Dates

Peripheral Property	Milestone
MP–00105 (Suspect Hazardous Substance Property)	
Design Complete	December 30, 1996 (Complete March 6, 1996)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00178	
Design Complete (if required)	December 31, 1998 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00179	
Design Complete	August 11, 1995 (Complete)
Construction Complete (target)	June 1, 2000 (Does not include pond)
MP–00180	
Design Complete	(Included with MP–00845)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00181 (Suspect Hazardous Substance Property)	
Sampling and Analysis Plan - Primary Document	August 3, 1995 (Complete)
Design Complete	April 10, 1996 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00198	
Design Complete	May 7, 1992 (Complete)
Construction Complete (target)	May 19, 1993 (Complete)
MP–00211 (Suspect Hazardous Substance Property)	
Design Complete	April 10, 1996 (Complete)
Construction Complete (target)	November 30, 1998 (Complete)
MP–00391 (Supplemental Standards Property)	
Design Complete	February 16, 1999 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00845	
Design Complete	December 31, 1998 (Complete)
Construction Complete (target)	July 31, 2000
MP–00886	
No Action Completion	
MP–00887 (Suspect Hazardous Substance Property)	
Design Complete	April 10, 1996 (Complete)
Construction Complete (target)	May 6, 1997 (Complete)
MP–00947	
Design Complete	April 28, 1994 (Complete)
Construction Complete (target)	July 18, 1996 (Complete)
MP–00948	
Design Complete	December 31, 1998 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00949	
Design Complete	December 31, 1998 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–00950, MP–00951, MP–00988, MP–01083, MP–01084	
Design Complete	January 2, 1996 (Complete November 17, 1995)
Construction Complete (target)	February 24, 1999 (Complete)

Table 5–3 (continued). Monticello Mill Tailings Site OU II Peripheral Property Milestones and Target Dates

Peripheral Property	Milestone
MP–00963	
Design Complete	April 20, 1993 (Complete)
Construction Complete (target)	December 12, 1995 (Complete)
MP–00964	
Design Complete	December 10, 1991 (Complete)
Construction Complete (target)	August 12, 1992 (Complete)
MP–00990 (Suspect Hazardous Substance Property)	
Submit Sampling and Analysis Plan to EPA/Utah	November 4, 1995 (Complete February 28, 1996) (1)
Design Complete	January 3, 1997 (Complete October 17, 1996)
Construction Complete (target)	September 30, 1997 (complete)
MP–01040	
Design Complete	July 31, 1998 (Complete)
Construction Complete (target)	November 30, 1998 (Complete)
MP–01041 (Supplemental Standards Property)	
Design Complete	February 16, 1999 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–01042	
Design Complete	August 11, 1995 (Complete)
Construction Complete (target)	November 30, 1998 (Complete)
MP–01077 (Supplemental Standards Property)	
Design Complete	February 16, 1999 (Complete)
Construction Complete (target)	November 30, 1999 (Complete)
MP–01080 (Repository Property)	
Design Complete	NA
Construction Complete (target)	NA
MP–01102	
Design Complete	June 21, 1997 (Complete)
Construction Complete (target)	November 30, 1998 (Complete)
Montezuma Creek Soil and Sediment Properties	
Draft-Final Alternatives Analysis	February 2, 1998 (Complete)
Draft-Final Action Memorandum	May 5, 1998 (Complete)
Draft-Final Remedial Action Design	March 23, 1998 (Complete)
Draft-Final Supplemental Standards Applications	January 20, 1999 (Complete)
Complete Remedial Action (including restoration)	July 28, 1999 (Complete)
OU II Construction Completion (target)(2)	July 31, 2000
OU II Draft-Final Remedial Action Report for Non-Groundwater-Related Peripheral Properties (3)	October 30, 2000 (Complete)

(1) Milestone was not missed because comments specific to the SAP were not received. The document was revised based on comments received for property MS–00685 (Young's Machine Shop).
(2) Exlcuding properties transferred to the City of Monticello.
(3) Non-Groundwater Peripheral Properties are: MP–00105, MP–00178, MP–00180, MP–00198, MP–00211, MP–00845, MP–00886, MP–00887, MP–00888, MP–00947, MP–00948, MP–00949, MP–00950, MP–00963, MP–00964, MP–00988, MP–01040, MP–01041, MP–01042, MP–01083, and MP–01102

Table 5–4. OU III Milestones and Target Dates

Document	Milestone
Remedial Investigation	
Draft-Final Remedial Investigation Report	February 2, 1998 (Complete)
Remedial Investigation Addendum	November 27, 1998 (Complete)
Feasibility Study	
Draft-Final Evaluation of PeRT Wall Treatability Study	September 30, 2002
Draft-Final (post-IRA) Feasibility Study Report	August 18, 2004
Surface Water/Groundwater Interim Remedial Action	
Draft-Final Interim Proposed Plan	March 16, 1998 (Complete)
DOE sign Interim Record of Decision	August 25, 1998 (Complete)
Final Interim Remedial Action Work Plan	October 30, 2000 (Complete)
Surface Water/Groundwater Decision Documents[a]	
Draft-Final Proposed Plan	December 10, 2004
Draft-Final Record of Decision	April 1, 2005
Surface Water/Groundwater RD/RA	
RD/RA Work Plan	September 17, 2005
Pre-Final Design	June 15, 2006
Initiate On-site construction activities (if required)	September 15, 2006
Operable Unit Completion	
Interim RAR[b]	January 15, 2008
Remedial Action Start	October 15, 2006

[a]The stipulated penalty milestones for this section are based on primary document review durations that are less than those indicated in the Federal Facilities Agreement. Specifically, EPA and UDEQ have agreed to a 30-calendar-day review period for the following documents:

Remedial Investigation Addenda
Feasibility Study
Proposed Plan
Record of Decision

Should EPA/UDEQ not meet the scheduled review times, DOE will be granted a day-for-day milestone extension relative to the assessment of stipulated penalties..

[b]For LTRAs, an interim RAR is prepared when the physical construction of the system is complete and the unit is operating as designed (EPA 1995). The RAR is amended and completed when the LTRA cleanup standards specified in the ROD are achieved.

Table 5–5. Monticello Vicinity Properties Site Milestones and Target Dates

Vicinity Property	Milestone
OU A	
Design Complete	March 1, 1996 (Complete September 6, 1994)
Construction Complete (target)	September 30, 1996 (Complete May 15, 1996)
Submit Draft Final RAR	November 8, 1996 (Complete)
OU B	
Design Complete	February 1, 1996 (Complete)
Construction Complete (target)	September 30, 1997 (Complete)
Submit Draft Final RAR	December 24, 1997 (Complete) July 14, 1999 (concurrence on resubmittal)
OU C	
Design Complete	February 1, 1996 (Complete February 13, 1996)
Construction Complete (target)	June 18, 1997 (Complete)
Submit Draft Final RAR	October 15, 1997 (Complete)
OU D	
Sampling and Analysis Plans Complete	February 27, 1996 (Complete)
Design Complete	October 17, 1996 (Complete)
Construction Complete (target)	November 4, 1997 (Complete)
Submit Draft Final RAR	March 18, 1998 (Complete)
OU E	
Design Complete	Complete
Construction Complete (target)	December 3, 1997 (Complete)
Submit Draft Final RAR	March 18, 1998 (Complete)
OU F	
Design Complete	July 7, 1997 (Complete)
Construction Complete (target)	July 10, 1998 (Complete)
Submit Draft Final RAR	December 24, 1997 (Complete)
OU G	
Design Complete	September 4, 1997 (Complete)
Construction Complete (target)	December 11, 1997 (Complete)
Submit Draft Final RAR	September 12, 1998 (Complete) July 14, 1999 (concurrence on resubmittal)
OU H	
Design Complete	October 31, 1998 (Complete)
Construction Complete (target)	December 30, 1998 (Complete)
Draft-Final RAR	April 29, 1999 (Complete)
Deletion Milestone	
Draft-Final Close-Out Report	June 26, 1999 (Complete)
Final Acceptance	September 2, 1999 (Complete)
Final Deletion Notice in Information Repository	February 28, 2000 (Complete)

6.0 Long-Term Surveillance and Maintenance Program

6.1 Long-Term Surveillance and Maintenance Program

DOE–GJO was designated as the DOE program office for "disposal site long-term surveillance and maintenance" on January 1, 1989 (DOE 1988a). In response to this designation, DOE–GJO established the LTSM Program to carry out its assigned responsibilities. The assignment of this responsibility to the GJO has since been reconfirmed on three occasions (DOE 1992a, DOE 1996a, and DOE 1998g).

The mission of the LTSM Program is to assume long-term custody of all completed DOE remedial action project disposal sites, as well as other sites assigned, and to establish a common office for the operation, security, surveillance, monitoring, and maintenance of these sites. Should a disposal site suffer severe damage or a catastrophic failure, DOE is responsible for undertaking any necessary corrective action.

Currently the program is responsible for annual surveillance and maintenance of 25 disposal sites assigned to DOE under Titles I and II of the Uranium Mill Tailings Radiation Control Act, and Section 151 of the Nuclear Waste Policy Act, as appropriate. No additional sites will be assigned to the GJO LTSM Program through the year 2000. Additional sites will be assigned in the out-years as remedial actions are completed.

DOE will need to perform LTSM at the Monticello sites because contaminants will be left in place at the OU I Repository and supplemental standards properties, in city streets and utility corridors, U.S. Highways 191 and 666 rights-of-way, and the U.S. Highway 191 embankment. LTSM will also be required to monitor restoration of wetlands. OU III will have LTSM requirements as well; however, these will not be initiated until after the ROD is completed.

DOE plans to transfer OU I of the MMTS, supplemental standards properties, and wetlands monitoring to the LTSM program on October 1, 2001. Budgets and plans are being prepared for acceptance of these sites at that time and to conduct inspections and monitoring as specified in the Monticello Administrative LTSM Plan and supporting LTSM Plans and procedures. The LTSM documents have been or will be developed to meet CERCLA requirements.

6.2 Long-Term Surveillance and Maintenance Process

6.2.1 Inspections

The objectives of the site inspection are to report on the condition of the site, note any changes or modifications, and identify potential problems. The inspection detects and documents progressive changes over several years as a result of slow-acting processes. Inspections typically include monitoring of all engineered features such as the disposal cell cover, drainage channels, vegetation, LDS, and LCRS to assure that the site remedy is functioning as designed. Inspection requirements, including wetlands monitoring, will be specified in the site LTSM plans for the required sites and will be performed as necessary. Inspections will be conducted in accordance with the schedule set forth in the LTSM Plans and procedures. Inspection reports will be

prepared following each inspection. Inspection reports will also be summarized in the CERCLA 5-year reviews.

6.2.2 Custodial Maintenance

Performance of routine maintenance will be completed, as necessary, to prevent development of significant maintenance problems and in response to acts of vandalism. Some examples of maintenance or repair that will be performed at the Monticello sites follow.

- Planned maintenance: Repository weed control, maintenance of access roads, sumps, ponds, institutional control features, wells, and security systems.
- Unscheduled maintenance: removal of animal burrows on the disposal cell, removal of deep-rooted or other unwanted vegetation.
- Repair: sign replacement, fence repairs, minor erosion mitigation.
- Replanting or reseeding where planned vegetation has not been successful.
- Pond 4: monitoring of conditions (i.e., full, intact), disposal of contents as necessary, as well as eventual decommissioning.

6.2.3 Corrective Action

Corrective actions are nonroutine actions taken to address specific, nonconforming conditions that may lead to significant environmental or public health impacts if not addressed. Corrective actions will be developed as the nature of the problems are defined. The *Final Monticello Remedial Action Project Repository and Pond 4 Groundwater Contingency Plan* (DOE 1998d) establishes some preliminary contingency actions if certain performance criteria are exceeded.

The need and scope of a corrective action is determined by the cause and magnitude of the problem, the immediate threat to the public or the environment, and the need to comply with the standards. The site inspectors evaluate the problem and prepare a report with recommendations for the next step (e.g., immediate action or continued evaluation) based on the requirements of the Contingency Plan. After EPA and UDEQ review the report and its recommendations, DOE will prepare a corrective action plan and submit it to the regulators. Corrective action begins after the regulators have concurred with the plan.

Two examples of conditions which may trigger corrective action are as follows:

1. **During repair of primary and secondary liner in Pond 4, damage to third liner is discovered.**

Corrective Action:

- Notify EPA/UDEQ.

- Collect soil samples at 6-in. increments for a total depth of 5 ft and test for contaminants found in pond LDS leachate.

- After soil sample analysis is complete and it is determined that no contaminants are found in the soil above background concentrations, repair primary, secondary, and tertiary liners as required. Test all repair seams.

- Resume operations.

- Evaluate need to modify Corrective Action Plan based on information gathered during repairs.

2. Leachate is pumped from LDS sump.

Corrective Action:

- Notify EPA/UDEQ.

- Inspect exposed liner around perimeter and at potential points of short circuiting.

- Evaluate appropriateness of conducting intrusive investigation based on depth of tailing fill present. Perform intrusive investigation if appropriate.

- Subcontractor repairs damaged areas as necessary.

- Subcontractor begins daily review of LDS depth data and calculates/records daily leakage rate.

Contingency actions have been also developed for the supplemental standards properties and identified in the LTSM Plans and Procedures. Additional contingency actions will be developed for OU I addressing the other aspects of Repository performance and the Millsite. Contingency actions have been or will be submitted in the LTSM Plans package to EPA and UDEQ for regulatory concurrence.

6.2.4 Personnel Health and Safety

All LTSM activities will be performed in accordance with the Monticello LTSM Project Safety Plan (DOE 2000f) to minimize risks to workers. This project safety plan (PSP) addresses safety and health procedures and practices for work that is anticipated to be conducted at the Monticello sites. In addition to anticipated work, the PSP addresses Job Safety Analysis and Safe Work Permit procedures that may be used to safely conduct work that has not already been addressed in the PSP.

6.3 Long-Term Surveillance and Maintenance Plan

DOE has prepared the *Monticello Long-Term Surveillance and Maintenance Administrative Manual* (DOE 2000c) for the Monticello sites. The manual is a compendium of plans,

procedures, and documents that implement the overall LTSM requirements associated with the MMTS and MVP Site. This manual brings together information and cites the more specific references that define the LTSM tasks for post-closure care at the various Monticello Millsite related remedial actions.

The administrative manual provides a general overview of the activities required ensuring long-term effectiveness of the remedial actions and provides procedures that are common to all aspects of the LTSM Program. LTSM Operating Procedures are a subset of the administrative manual and are designed for implementation by the LTSM Program. LTSM Operating Procedures include the following volumes:

- Volume I—*LTSM Operating Procedures for the Monticello Mill Tailings Site Repository and Millsite*. This volume has been written in draft form and submitted to the EPA and UDEQ for review.

- Volume II—*LTSM Operating Procedures for Monticello Supplemental Standards Properties*. This volume has been written and reviewed by the EPA and UDEQ. The draft-final is scheduled for completion on December 15, 2000.

- Volume III—*LTSM Operating Procedures for Monticello Surface and Groundwater*. This document will not be written until the OU III Record of Decision is finalized in 2005.

- Volume IV—*LTSM Operating Procedure for Annual Inspections and CERCLA 5-Year Reviews*. This volume will be written in 2001.

7.0 Worker Health and Safety Protection

Protection of worker health and safety is critical to planning and execution of the Monticello Projects. Compliance with worker health and safety requirements will be achieved through detailed planning, effective project management, and self-assessment.

The MACTEC–ERS Occupational Safety and Health program is derived from the requirements of 29 CFR 1910, 29 CFR 1926, 10 CRF 835, and a variety of DOE Orders. It complies with all Occupational Safety and Health Administration and DOE requirements.

The *Grand Junction Office Health and Safety Standards* (GJO 2000a) and the *Grand Junction Office Site Radiological Control Manual* (GJO 2000b) present the detailed policies, procedures and other requirements applicable to the work performed by MACTEC–ERS. Health and safety hazard analysis is used to evaluate the known and potential site health and safety hazards from available data. The analysis also qualitatively evaluates the risks from potential work exposures for identified tasks to estimate the significance of the exposure. The degree of protection that must be provided is determined by the types and severity of potential exposures. The worker protection requirements are developed on the basis of the hazard analysis, and control measures are assigned according to the applicable industrial safety, radiation protection, or industrial hygiene requirements. HASPs identify appropriate engineering and administrative controls, including measures to mitigate temperature extremes, training requirements, exposure monitoring, and site controls.

Remedial activities were conducted in accordance with the *Monticello Projects Health and Safety Plan* (DOE 1997b). This plan and the associated task and site-specific HASPs cover the tasks implemented on the Monticello Projects. Appendix A to the *Monticello Projects Health and Safety Plan* (DOE 1997b) defines the model task and site-specific HASP. The Monticello Site Safety Coordinator assigned to the Monticello Projects was responsible for completing each task and site-specific HASP, with the assistance and input of the responsible Project Manager, before the scope of work addressed by the HASP was started. In addition, the HASP aided in coordinating activities with applicable Radiation Work Permits and Safe Work Permits.

Remaining restoration work at the Millsite will be conducted in accordance with the City of Monticello's restoration subcontractor's HASP. As remediation is completed at the Monticello sites and the sites are transitioned from construction to LTSM activities, work will be conducted under the *Monticello LTSM Project Safety Plan* (DOE 2000f). This plan specifies procedures to be used for all LTSM activities and identifies the Site Safety Supervisor responsible for overseeing the work activities performed by the Technical Assistance and Remediation (TAR) Contractor employees, subcontractors and vendors. The Site Safety Supervisor serves as the point-of-contact for health and safety issues and communication and ensures that all LTSM work is conducted in compliance with project health and safety requirements.

End of current text

8.0 Quality Assurance Management

Monticello Program and Project management is committed to establishing, maintaining, and implementing an effective QA program that achieves quality in all activities through planning, performing, assessing, and continually improving the process. The work performed must comply with the requirements of the GJO QA Program.

Work is accomplished through the resources of people, equipment, and procedures. All management is responsible for ensuring people have the information, resources, and support necessary to complete the work in a safe, efficient, and quality manner. The achievement of quality is an interdisciplinary function led by management and is the responsibility of all personnel.

The GJO QA Program, documented in the *Grand Junction Office Quality Assurance Standards* (GJO 1, current revision), is used as the basis for planning, performing, and documenting project QA activities and construction activities at Monticello. Specific QA activities and program elements are implemented in accordance with the overall QA program requirements, and as planned and scheduled with the Monticello Program Manager.

DOE–AL and its Contractors are required to have QA programs that use a graded approach to meet the requirements of 10 CFR 830.120. The GJO QA Program, documented in the *Grand Junction Office Quality Assurance Standards* (GJO 1, current revision), has been accepted by DOE as meeting this requirement. Additionally, the GJO QA Program is designed to adopt and implement the requirements of ANSI/ASQC E4–1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (ANSI/ASQC 1995).

The QA Consultant is assigned to assist Program/Project management in defining QA program requirements and providing oversight to Contractor personnel in the implementation of the requirements. A *Monticello Projects Quality Assurance Program Plan* (QAPP) (DOE 1998f) has been prepared and implemented to define the applicable QA requirements, in a graded manner, and to meet the following project QA objectives.

- To implement the applicable requirements of the QA program as defined in the *Grand Junction Office Quality Assurance Standards* (GJO 1, current revision) and tailored to the project in QA program and project plans.

- To ensure applicable quality requirements are adequately addressed in the appropriate project documents (e.g., plans, procedures, procurement documents, design documents).

- To implement a quality program that addresses (1) management systems, (2) collection and evaluation of environmental data, and (3) the design, construction, and operation of engineered environmental systems.

- To apply a graded approach to QA requirements that will achieve project goals in an efficient, cost-effective, safe, and productive manner.

The QA Consultant maintains the QAPP and develops and maintains subordinate QAPjPs when required. Changes to project tasks require a review of the QA program to ensure the specified requirements are maintained current to project activities. QA planning documents that have been prepared for the Monticello Projects include:

- *Monticello Projects Quality Assurance Program Plan* (DOE 1998f)
- *Construction Quality Assurance Plan for the Monticello Remedial Action Project, Operable Unit I, Millsite Remediation* (DOE 1995)
- "Quality Assurance Project Plan for the Monticello Long-Term Surveillance and Maintenance Project" (Appendix A of the *Monticello Long-Term Surveillance and Maintenance Administrative Manual*) (DOE 2000c)

9.0 Acquisition Strategy

MACTEC–ERS performs subcontracting for the Monticello Projects in accordance with procurement policies, procedures, and provisions of its prime contract. Approved terms and conditions are used for all subcontracts that incorporate the required flow-down clauses from the Federal Acquisition Regulations and DOE Acquisition Regulations.

In the awarding of subcontracts, MACTEC–ERS gives consideration to qualified small businesses, minority (disadvantaged) businesses, women-owned businesses, and labor surplus areas to the maximum extent practicable. Procurements may be completed through a small business set-aside or open competition depending on the nature of the project and the anticipated competition.

MACTEC–ERS develops solicitations after receipt of a fully approved engineering package. The package normally includes a properly executed purchase requisition, in-house estimate, design drawings, statement of work, general construction specifications, terms and conditions, bid form, and wage determination. The solicitation is mailed to all potential bidders, followed by a bid tour of the project. Award is made on the basis of the criteria specified in the solicitation after appropriate approvals by MACTEC–ERS management and DOE personnel, if required. Subsequent changes to existing subcontracts are negotiated and approved in accordance with current procedures.

The subcontracts for construction are generally awarded on the basis of sealed bids. However, procurement by negotiation may be used when evaluation of technical proposals is required or there are other appropriate reasons to procure through negotiation.

The successful bidder is issued a subcontract incorporating all requirements of the solicitation. The subcontractor is responsible for performing in accordance with the defined performance period and a schedule accepted by MACTEC–ERS. Performance is monitored daily by Construction Management personnel who document field conditions, construction progress, and proposed changes to the drawings. The procurement representative approves the change and directs the subcontractor to perform.

The procurement representative is responsible for all administrative duties related to the purchase order or subcontract, including maintaining adequate files, tracking deliverables, negotiating modifications, authorizing payments, and closing out the file. All contact with companies for prices, suspensions of work, cure notices, or other administrative items are handled through the procurement representative.

Purchase requisitions of $2,500 or less generally require that only one company be contacted. Most of these orders are placed on the procurement representative's knowledge that the price is fair and reasonable. For requisitions of more than $2,500, the procurement representative will make a diligent effort to obtain competitive bids from two or more sources. If situations do not allow competition because of special circumstances, the file will be documented as such in accordance with sole-source procurement procedures.

End of current text

10.0 Project Control Systems

Effective project controls are achieved through detailed planning, quality baselines, performance evaluation, funds management, change control, and timely and appropriate corrective actions. The *Project Management Control System Manual* (MACTEC–ERS 1996) defines the integrated planning and control system used to achieve project objectives. This manual is a guidance document that describes the functional interface between project control and funds management.

The requirements of DOE Order 430.1 "Life Cycle Asset Management" are implemented. The management objective is to optimize the level of control at the lowest cost to the Government. The level of control for baseline development, project performance, and change management on individual subprojects is consistent with the requirements of DOE Order 430.1.

The referenced DOE–GJO manual also contains detailed procedures on planning and controlling projects. Funds management and change control are integrated with estimating, scheduling, and budgeting.

End of current text

11.0 References

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Appendix A

List of Included Properties by NPL Site and Operable Unit

DOE ID	Street	Inclusion Date
MS–00084	384 South 2nd East	01/27/84
MS–00085	396 S 2nd East St	01/27/84
MS–00086	164 East 4th South	01/27/84
MS–00087	148 East 4th South St	01/27/84
MS–00088	433 S 1st East	01/27/84
MS–00091	265 E 1st South St	11/01/84
MS–00092	273 E 1st South St	06/08/84
MS–00093	80 South 3rd East	06/08/84
MS–00094	281 East 1st South St	06/08/84
MS–00096	196 S Third East St	03/01/81
MS–00097	217 South 2nd East	06/08/84
MS–00099	280 South 3rd St	06/08/84
MS–00100	333 South 2nd East	06/08/84
MS–00101	389 South 2nd East	01/27/84
MS–00102	417 South 2nd East	06/08/84
MS–00103	433 South 2nd East	06/08/84
MS–00104	449 South 2nd East	06/08/84
MS–00114	225 S 2nd East St	10/09/85
MS–00124	301 Silverstone West Ln	09/25/89
MS–00126	548 Circle Dr	03/01/89
MS–00130	76 W 3rd South St	03/01/89
MS–00133	217 & 233 South 3rd East	01/27/84
MS–00134	216 South 3rd East	06/08/84
MS–00135	196 South 2nd East St	11/01/84
MS–00136	EG & G AREA 6	06/08/84
MS–00137	600 North Main St	03/01/89
MS–00138	281 East 3rd South	06/08/84
MS–00139	365 South 2nd East	06/08/84
MS–00140	381 East 3rd South	11/01/84
MS–00141	393 East 3rd South	11/01/84
MS–00143	544 E 3rd South St	06/08/84
MS–00145	600 Clay Hill Dr	06/08/84

DOE ID	Street	Inclusion Date
MS–00147	180 E 4th South St	06/08/84
MS–00148	464 South 2nd East St	09/05/85
MS–00150	416 South Main St	06/08/84
MS–00151	149 W 3rd South St	03/01/89
MS–00152	Cedar Ln (Lot 76)	04/21/94
MS–00153	87 E 5th South St	05/22/87
MS–00154	435 S Main St	05/22/87
MS–00155	S Hwy 191, M-634	05/22/87
MS–00156	64 E 4th South	05/22/87
MS–00157	45 S 2nd East St	05/22/87
MS–00159	149 S 2nd East	05/22/87
MS–00161	249 East 2nd South	05/22/87
MS–00162	217 & 249 E 3rd South	05/22/87
MS–00163	264 E Center	05/22/87
MS–00164	64 S 3rd East	05/22/87
MS–00166	365 E 3rd South St	05/22/87
MS–00167	564 East 3rd South St	05/22/87
MS–00168	397 East 3rd South	05/22/87
MS–00170	S Hwy 191	05/22/87
MS–00171	433 South Main St	03/01/89
MS–00174	465 South 1st East St	10/07/88
MS–00183	81 East 3rd South St	09/25/89
MS–00184	South Main St	09/25/89
MS–00185	South 2nd East St	09/25/89
MS–00186	249 South 2nd East St	09/25/89
MS–00187	165 East 4th South	09/25/89
MS–00188	397 South 1st East	09/25/89
MS–00189	164 East 3rd South	09/25/89
MS–00191	165 South 2nd East	09/25/89
MS–00192	226 East 1st South	09/25/89
MS–00193	264 East 1st South	09/25/89
MS–00194	280 East 1st South St	09/25/89

DOE ID	Street	Inclusion Date
MS–00195	East 3rd South St	09/25/89
MS–00196	265 South 3rd East St	09/25/89
MS–00197	249 B South 3rd East St	09/25/89
MS–00200	262 East Center St	09/25/89
MS–00201	381 South 1st East St	09/25/89
MS–00202	394 South 1st East St	09/25/89
MS–00203	397 South 1st East St	09/25/89
MS–00204	365 South 1st East St	09/25/89
MS–00209	216 East 1st South St	09/25/89
MS–00897	453 S Main St	07/21/94

MVP Operable Unit B Properties

DOE ID	Street	Inclusion Date
MS–00004	32 Blue Mountain Dr	08/30/91
MS–00009	465 Oak Crest Dr	02/02/93
MS–00018	180 W 3rd South St	11/05/90
MS–00024	480 S 1st West St	04/03/90
MS–00029	450 S 200 West St	01/23/91
MS–00034	49 S 100 West St	06/19/90
MS–00037	180 S Main St	02/14/94
MS–00038	16 W 200 South St	06/19/90
MS–00044	364 S Main St	01/31/91
MS–00045	80 W 4th South St	01/23/91
MS–00064	333 S Main St	12/07/92
MS–00070	432 S 1st East St	01/25/90
MS–00080	80 S 2nd East St	08/02/94
MS–00081	197 E 2nd South St	05/30/90
MS–00082	197 E 3rd South St	07/25/90
MS–00089	164 E First North St	02/26/90
MS–00098	248 S 3rd East St	06/19/90
MS–00106	332 E Center	06/19/90
MS–00107	249 A S 3rd East St	12/07/92
MS–00110	317 Meadowlark Ln	05/12/92
MS–00128	516 S Main St	05/30/90
MS–00132	97 N 2nd West St	01/25/90
MS–00146	US Hwy 191/N E Inter S Main	12/05/89
MS–00149	448 S Main St	06/19/90
MS–00158	65 S Second East St	07/25/90
MS–00182	596 South Eldredge Ln	02/26/90
MS–00199	264 East 2nd South St	07/25/90
MS–00206	349 South 2nd West	11/26/90
MS–00207	East 5th North St	01/25/90
MS–00212	300 East 4th South St	01/25/90

DOE ID	Street	Inclusion Date
MS–00213	East 1st North St	01/25/90
MS–00217	216 East 1st North St	01/25/90
MS–00219	117 East 1st South St	08/23/91
MS–00220	32 East Center St	10/10/91
MS–00221	164 South 1st West St	08/02/94
MS–00222	196 South 1st West St	08/02/94
MS–00224	148 East Center	01/25/90
MS–00225	196 South Main St	07/25/90
MS–00226	197 South 3rd East St	12/09/91
MS–00227	145 West 2nd South St	01/14/92
MS–00230	265 South Main St	01/25/90
MS–00234	195 East 1st North St	11/02/93
MS–00235	31 Circle Dr	01/25/90
MS–00238	116 East 3rd South St	01/25/90
MS–00239	549 South Main St	02/26/90
MS–00241	664 East Center St	01/25/90
MS–00242	664 East Center St	01/25/90
MS–00243	South 3rd East St	12/09/91
MS–00244	181 South 3rd East St	12/09/91
MS–00245	South 3rd East St	12/09/91
MS–00246	133 South 3rd East St	12/09/91
MS–00247	17 South 3rd East St	12/31/91
MS–00248	US Hwy 666	07/01/92
MS–00250	US Hwy 666	07/01/92
MS–00251	US Hwy 666	07/01/92
MS–00261	197 East Center St	02/02/93
MS–00267	17 North 1st East St	11/26/90
MS–00270	West 1st North St	04/03/90
MS–00274	216 West Center St	05/30/90
MS–00282	64 N 3rd West St	04/03/90
MS–00283	65 N 200 West	11/26/90
MS–00289	64 B South 2nd West St	11/05/90

DOE ID	Street	Inclusion Date
MS–00293	233 West Center St	11/26/90
MS–00301	West 3rd South St	11/26/90
MS–00304	333 Abajo Dr	06/18/91
MS–00308	216 South 2nd West St	11/28/90
MS–00313	W 3rd South & W 4th South	08/20/92
MS–00315	248 Uranium Dr	12/11/90
MS–00316	364 South 2nd West St	08/20/92
MS–00318	316 Uranium Dr	01/23/91
MS–00322	48 Meadowlark Ln	12/31/91
MS–00323	Meadowlark Subdivision	12/31/91
MS–00326	49 West 4th South St	09/12/91
MS–00329	164 Uranium Dr	12/11/90
MS–00336	416 South 1st West St	02/26/91
MS–00345	380 South Main St	06/19/90
MS–00347	81 West 3rd South St	02/21/91
MS–00351	65 East 4th South St	05/02/91
MS–00352	396 South 1st East St	05/02/91
MS–00356	48 East 3rd South St	05/02/91
MS–00357	332 South 1st East St	05/02/91
MS–00359	148 East 3rd South St	11/29/93
MS–00360	132 East 3rd South St	11/29/93
MS–00361	349 & 333 South 1st East St	05/24/91
MS–00363	248 South 2nd East St	03/27/91
MS–00364	264 South 2nd East St	06/19/90
MS–00365	297 South 1st East St	03/27/91
MS–00367	233 & 249 South 1st East St	03/27/91
MS–00368	217 South 1st East St	03/27/91
MS–00369	180 East 2nd South St	03/27/91
MS–00370	164 East 2nd South St	03/27/91
MS–00375	254 South 1st East St	05/02/91
MS–00382	80 West 3rd South St	06/18/91
MS–00384	65 West 2nd South St	01/31/91

DOE ID	Street	Inclusion Date
MS–00394	264 South 1st West St	06/18/91
MS–00396	196 West 3rd South St	04/03/90
MS–00397	181 West 2nd South St	02/21/91
MS–00398	253 South 2nd West St	06/18/91
MS–00399	231 South 2nd West St	05/24/91
MS–00405	180 West 2nd South St	01/31/91
MS–00411	48 West 2nd South St	11/26/90
MS–00413	181 South First West St	11/02/93
MS–00414	96 West 2nd South St	06/18/91
MS–00415	64 West 2nd South	03/07/94
MS–00424	49 W 1st South St	02/26/91
MS–00426	165 South Main St	05/24/91
MS–00427	165 East 2nd South St	06/18/91
MS–00428	164 South 2nd East St	06/18/91
MS–00429	117 East 2nd South St	06/18/91
MS–00430	133 East 2nd South St	06/18/91
MS–00437	132 S 3rd East St	01/31/92
MS–00438	97 S 2nd East St	04/03/91
MS–00439	249 E 1st South St	09/22/93
MS–00442	S 2nd East St	08/23/91
MS–00443	165 E 1st South St	08/23/91
MS–00444	S 200 East St	08/23/91
MS–00445	149 E 1st South St	08/23/91
MS–00446	164 E Center St	08/23/91
MS–00447	61 E 1st South St	10/10/91
MS–00449	97 E 1st South St	10/10/91
MS–00456	80 E Center St	10/10/91
MS–00459	64 E Center St	10/10/91
MS–00462	132 Uranium Dr	02/21/91
MS–00464	147 W 1st N St	08/20/92
MS–00476	48 S 1st West St	04/03/90
MS–00489	S 2nd West St	08/20/92

DOE ID	Street	Inclusion Date
MS–00499	416 W Center St	09/22/93
MS–00512	196 W 1st St	01/31/91
MS–00513	180 W 1st South St	01/31/91
MS–00515	17 S 2nd West St	08/27/91
MS–00517	16 S 1st West St	08/27/91
MS–00520	W 1st North St	02/26/91
MS–00523	164 W Center St	01/31/91
MS–00524	49 N 1st West St	06/18/91
MS–00529	116 N 1st West St	01/31/91
MS–00534	164 N 100 West St	06/19/90
MS–00535	117 N 1st West St	01/31/91
MS–00563	248 W 1st N St	05/12/92
MS–00566	N 2nd W St	08/30/91
MS–00578	281 Blue Mountain Dr	06/18/91
MS–00585	33 Blue Mountain Dr	08/27/91
MS–00588	264 Mountain View Dr	02/14/94
MS–00622	533 Circle Dr	03/05/92
MS–00623	565 Circle Dr	05/24/91
MS–00656	South 3rd East St	12/31/91
MS–00657	South 3rd East St	12/31/91
MS–00658	81 Meadowlark Ln	12/31/91
MS–00659	80 Meadowlark Ln	12/31/91
MS–00662	381 1st S Meadowlark Ln	12/09/91
MS–00663	97 Meadowlark Ln	12/09/91
MS–00664	316 1st S Meadowlark Ln	12/09/91
MS–00665	364 1st S Meadowlark Ln	12/09/91
MS–00668	Meadowlark Ln	01/31/92
MS–00669	Meadowlark Ln	01/31/92
MS–00689	Meadowlark Ln	12/31/91
MS–00690	Meadowlark Ln	12/31/91
MS–00691	Meadowlark Ln	12/09/91
MS–00692	Meadowlark Ln	12/09/91

DOE ID	Street	Inclusion Date
MS–00693	Meadowlark Ln	12/09/91
MS–00694	Meadowlark Ln	12/09/91
MS–00695	1st S Meadowlark Ln	12/09/91
MS–00696	1st S Meadowlark Ln	12/09/91
MS–00697	1st S Meadowlark Ln	12/09/91
MS–00698	1st S Meadowlark Ln	12/09/91
MS–00699	1st S Meadowlark Ln	12/09/91
MS–00700	1st S Meadowlark Ln	12/09/91
MS–00701	1st S Meadowlark Ln	12/09/91
MS–00702	1st S Meadowlark Ln	12/09/91
MS–00703	1st S Meadowlark Ln	12/09/91
MS–00704	1st S Meadowlark Ln	12/09/91
MS–00705	1st S Meadowlark Ln	12/09/91
MS–00706	1st S Meadowlark Ln	01/07/92
MS–00707	1st S Meadowlark Ln	01/07/92
MS–00708	1st S Meadowlark Ln	01/07/92
MS–00709	1st S Meadowlark Ln	01/07/92
MS–00710	1st S Meadowlark Ln	01/07/92
MS–00711	1st S Meadowlark Ln	01/07/92
MS–00712	1st S Meadowlark Ln	01/07/92
MS–00713	Meadowlark Ln	01/07/92
MS–00714	Meadowlark Ln	01/07/92
MS–00715	Meadowlark Ln	01/07/92
MS–00716	Meadowlark Ln	01/07/92
MS–00717	Meadowlark Ln	01/07/92
MS–00718	Meadowlark Ln	01/07/92
MS–00719	Meadowlark Ln	01/07/92
MS–00721	Meadowlark Ln	01/31/92
MS–00722	Meadowlark Ln	01/31/92
MS–00723	Meadowlark Subdivision	12/31/91
MS–00726	N Main St	08/30/91
MS–00738	696 N Main St	08/30/91

DOE ID	Street	Inclusion Date
MS–00742	E 6th N St	08/30/91
MS–00743	81 E 6th North St	01/14/92
MS–00747	E 5th North St	02/21/91
MS–00748	550 N Main St	02/21/91
MS–00749	264 N 2nd W St	08/27/91
MS–00756	364 W 1st N St	06/18/91
MS–00758	97 N 4th W St	08/30/91
MS–00782	97 E 5th North St	02/21/91
MS–00799	N Main St	08/30/91
MS–00800	348 N Main St	09/12/91
MS–00802	416 N Main St	09/12/91
MS–00806	480 N Main St	06/18/91
MS–00826	164 S 2nd West St	01/31/91
MS–00831	432 W Center St	02/26/91
MS–00844	180 Uranium Dr	09/12/91
MS–00848	301 Silverstone W St	01/23/91
MS–00861	349 Abajo Dr	08/27/91
MS–00862	A33230364202	09/12/91
MS–00867	Uranium Dr	08/30/91
MS–00876	265 Lower Uranium Dr	02/21/91
MS–00877	249 Lower Uranium Dr	02/26/91
MS–00879	A33230364814	03/05/92
MS–00883	549 S Main St	03/05/92
MS–00884	S Main St	06/18/91
MS–00891	South Hwy 191	01/14/92
MS–00923	Near Hwy 191	09/12/91
MS–00936	E Hwy 666	09/12/91
MS–00946	E Hwy 666	08/30/91
MS–00952	E Hwy 666	11/02/93
MS–00956	E Hwy 666	01/31/92
MS–00958	E Hwy 666	03/05/92
MS–00962	549 S Main St	01/31/91

DOE ID	Street	Inclusion Date
MS–00969	E Hwy 666	10/10/91
MS–00973	E Hwy 666	09/12/91
MS–00981	South 14th East St	02/21/91
MS–00986	Monticello 84355 (also 33523E323600)	01/08/92
MS–00992	E Hwy 666	03/05/92
MS–00999	S Hwy 191	02/11/92
MS–01001	E Hwy 666	03/05/92
MS–01002	33S24E324801	09/12/91
MS–01037	S Hwy 191	03/05/92
MS–01039	S Hwy 191	01/31/92
MS–01058	717 Abajo Dr	02/02/93
MS–01061	264 E 2nd South St	07/25/90
MS–01063	N Main St (also A33230254806)	09/12/91
MS–01064	N Main St	02/11/92
MS–01069	S Hwy 191	03/05/92
MS–01070	549 S Main St	03/05/92
MS–01071	East Center St	05/12/92
MS–01072	549 S Main St	01/07/94
MS–01073	381 S 1st West St	01/25/90
MS–01076	1057 N Main St	11/02/93
MS–01079	49 W Fourth St	02/14/94

MVP Operable Unit C Properties

DOE ID	Street	Inclusion Date
MS–00002	248 Silverstone West Ln	11/06/92
MS–00013	381 Abajo Dr	11/06/92
MS–00020	220 & 222 W 4th South St	11/06/92
MS–00039	248 S Main St	03/05/92
MS–00115	332 North Creek Lane	07/10/90
MS–00117	North Creek Ln -A00170000070	11/06/92
MS–00125	401 Silverstone West Ln	11/06/92
MS–00127	549 Circle Dr	11/06/92
MS–00144	516 E 3rd South St	01/25/90
MS–00169	417 North Creek Ln	11/06/92
MS–00218	33 North Main St	04/03/90
MS–00233	96 West 4th South St	01/25/90
MS–00266	80 North 1st East St	11/06/92
MS–00271	17 North Main St	11/06/92
MS–00275	49 N 2nd West	04/03/90
MS–00281	96 N 3rd West St	07/25/90
MS–00284	249 W 1st North St	02/21/91
MS–00325	481 South 1st West St	11/06/92
MS–00328	417 South 1st West St	02/21/91
MS–00330	181 West 4th South St	03/05/92
MS–00338	396 South 1st West St	11/06/92
MS–00419	154 South Main St	08/05/92
MS–00425	33 W 1st South St	02/21/91
MS–00451	N Creek Ln (Lot #3)	07/25/90
MS–00475	32 N 2nd West St	11/06/92
MS–00482	564 Oak Crest Dr	11/06/92
MS–00551	249 N 1st W St	01/23/91
MS–00600	32 Park View Dr	11/06/92
MS–00608	265 Cedar Ln	11/06/92
MS–00620	596 Circle Dr	01/31/91

DOE ID	Street	Inclusion Date
MS–00624	N Creek Ln	11/06/92
MS–00750	248 N 2nd W St	08/30/91
MS–00768	E Hwy 666	08/20/92
MS–00917	E Hwy 666	11/06/92

MVP Operable Unit D Properties

DOE ID	Street	Inclusion Date
MS–00111	539 E Center St	05/30/90
MS–00112	665 E Center St	06/19/90
MS–00685	1149 N Main St	02/21/91
MS–00688	1149 N Main St	02/21/91
MS–00910	697 E Center St	06/18/91
MS–00959	1280 E Center St	10/10/91

MVP Operable Unit E Properties

DOE ID	Street	Inclusion Date
MS–00175	578 South Eldredge Ln	10/07/88
MS–00177	562 Eldredge Ln	10/07/88
MS–00970	E Hwy 666	09/12/91
MS–00971	E Hwy 666	09/12/91
MS–00972	E Hwy 666	01/14/92
MS–00977	E Hwy 666	11/02/98
MS–00987	33524E323601	01/31/92
MS–00989	E Hwy 666	11/02/98
MS–01006	E Hwy 666	09/12/91
MS–01065	E Hwy 666	11/02/98
MS–01078	Southern Sec. Pinto Power Sta	11/29/93

MVP Operable Unit F Properties

DOE ID	Street	Inclusion Date
MS–00051	533 S Main St	06/08/84
MS–00078	96 N 1st East St	10/14/88
MS–00108	395 E 3rd South St	06/08/84
MS–00116	349 North Creek Ln	11/06/92
MS–00205	1117 East Clay Hill Dr	01/25/90
MS–00314	348 South 2nd West St	11/06/92
MS–00344	48 West 4th South St	08/02/93
MS–00433	145 South 1st East St	06/18/91
MS–00858	449 Silverstone E Ln	11/06/92
MS–00859	449 Silverstone East Ln	11/06/92

MVP Operable Unit G Properties

DOE ID	Street	Inclusion Date
MS–00410	116 S 1st West St	08/25/95
MS–00686	1149 N Main St	08/25/95
MS–00918	E Hwy 666	01/12/96
MS–01103	Wooded Way	12/16/98
MS–01082	280 S Main St	03/01/89
MS–81050	South Hwy 191	11/01/96
MS–81086	South Hwy 191	11/26/96
MS–81088	North Hwy 191	05/16/97
MS–81094	North Hwy 191	11/26/96
MS–81095	East Hwy 666	11/01/96
MS–81097	North Hwy 191	11/26/96

MVP Operable Unit H Properties

DOE ID	Street	Inclusion Date
MS–00176	South Eldredge Ln	10/07/88
MS–00892	US Hwy 191	11/15/93
MS–00895	US Hwy 191	11/15/93
MS–01020	US Hwy 191	08/02/94
MS–01021	US Hwy 191	09/12/91

MMTS Operable Unit II Properties

DOE ID
MP–00105
MP–00178
MP–00179[a]
MP–00180
MP–00181[a]
MP–00198
MP–00211
MP–00391[a]
MP–00845
MP–00886
MP–00887
MP–00888
MP–00947
MP–00948
MP–00949
MP–00950
MP–00951[a]
MP–00963
MP–00964
MP–00988
MP–00990[a]
MG–01026[a]
MG–01027[a]
MG–01029[a]
MG–01030[a]
MG–01033[a]
MP–01040
MP–01041
MP–01042
MP–01077[a]
MP–01080
MP–01083
MP–01084[a]
MP–01102

[a]Properties that will be included in the OU I RAR (Millsite peripheral properties). All other properties will be included in an OU II RAR and will be deleted separately from the NPL.

Properties Where Supplemental Standards Are Applied

DOE ID	Operable Unit
MP–00391	MMTS OU II
MP–01077	MMTS OU II
MP–01041	MMTS OU II
MP–00951	MMTS OU II
MP–00990	MMTS OU II
MP–01084	MMTS OU II
MG–01026	MMTS OU II
MG–01027	MMTS OU II
MG–01029	MMTS OU II
MG–01030	MMTS OU II
MG–01033	MMTS OU II
MS–00176	MVP OU H

MMTS Operable Unit III Properties

DOE ID
MP–00179
MP–00181
MP–00391
MS–00893 (Millsite)
MP–00951[a]
MP–00990[a]
MG–01026[a]
MG–01027[a]
MG–01029[a]
MG–01030[a]
MG–01033[a]
MP–01077
MP–01084[a]

[a] Soil and sediment component will be closed out under OU I and OU II Groundwater-Related Properties

Appendix B

Definition of Design Submittal Content

Appendix B

Definition of Design Submittal Content

The following proposed definitions of design content are different from the definitions of design documents provided in association with the RDWP (DOE 1992b). The changes pertain to the limited extent of the design report that will be prepared. Design reports will now be focused towards an evaluation of compliance with ARARs.

Conceptual Design (30 Percent Design)

Conceptual design submittals will focus on major design concepts and the ability of the concepts to achieve compliance with the ARARs in question. Conceptual submittals will contain the following components:

Design Drawings:

> Drawings will show only the site plan layout and design concept (e.g., schematics) of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be identified sufficiently to portray the design concept. A preliminary drawing sheet index will be included indicating the layout and content of the final drawing set.

Design Criteria:

> Design criteria for all major components that are necessary to demonstrate ARAR compliance will be identified to indicate the basis for design. Design criteria for minor components may or may not be included.

Design Calculations:

> Initial calculations performed to demonstrate the ARAR compliance aspects of the project will be included.

ARAR Compliance Review:

> All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

Intermediate Design (60 Percent Design)

The 60 percent intermediate design submittal represents a design that is in a developmental stage. Its purpose is to demonstrate that the design is progressing and to allow reviewers an opportunity to determine if issues of concern are being addressed properly. It is not intended to be biddable nor constructible. The 60 percent intermediate design submittal will contain the following components.

Design Drawings:

Drawings will show the overall project layout and details of major components of the project that are necessary to indicate how ARAR compliance will be achieved. Sizing and dimensions will be identified sufficiently to portray the design concept and final optimization will not be complete at this stage. Some, but not all, supporting details will be included. The drawings will be in a developmental stage and will not be complete nor coordinated within themselves. Anticipated drawings and sheets that will become part of the final plan set will be identified but may not be included.

Design Basis Report:

The report will identify the design basis and criteria and will indicate how the design of major components will perform to meet the ARARs and satisfy the requirements of the ROD. Design criteria for other design components also will be identified. All ARARs affecting the design will be identified and discussed as to how the design will comply with each respective ARAR.

Design Calculations:

All calculations required to support the design in compliance with ARARs will be identified and will be complete.

Construction Specifications:

All specification sections necessary to support the project will be identified. Sections will be in various stages of completion ranging from partial drafts to rough drafts. Specifications will not be coordinated with the drawings nor within themselves.

Pre-Final Design (90 Percent Design)

Pre-Final design submittals will be complete, biddable, and constructible packages that are final except for last minute minor regulatory comments that need to be incorporated into the design report and the contract documents prior to bidding. The submittal package will include design drawings, a design report, design calculations, and construction specifications.

Final Design (100 Percent Design)

Final design submittals will be the same as the Pre-Final Design submittal but will incorporate agreed upon regulatory comments from the Pre-Final submittal.

Appendix C

Monticello Projects Funding

Funding Levels for Monticello Projects

	Prior Years	FY 01	FY 02	FY 03	FY 04	FY 05
Annual Funding Level						
MRAP	182,271,929	5,187,830	1,928,245			
MVP	41,594,063					
MSG	13,111,607	826,170	1,022,755	894,338	832,557	980,727
	236,977,599	6,014,000	2,951,000	894,338	832,557	980,727
Cumulative Funding Level						
MRAP	182,271,929	187,459,759	189,388,004	189,388,004	189,388,004	189,388,004
MVP	41,594,063	41,594,063	41,594,063	41,594,063	41,594,063	41,594,063
MSG	13,111,607	13,937,777	14,960,532	15,854,870	16,687,427	17,668,154
	236,977,599	242,991,599	245,942,599	246,836,937	247,669,494	248,650,221